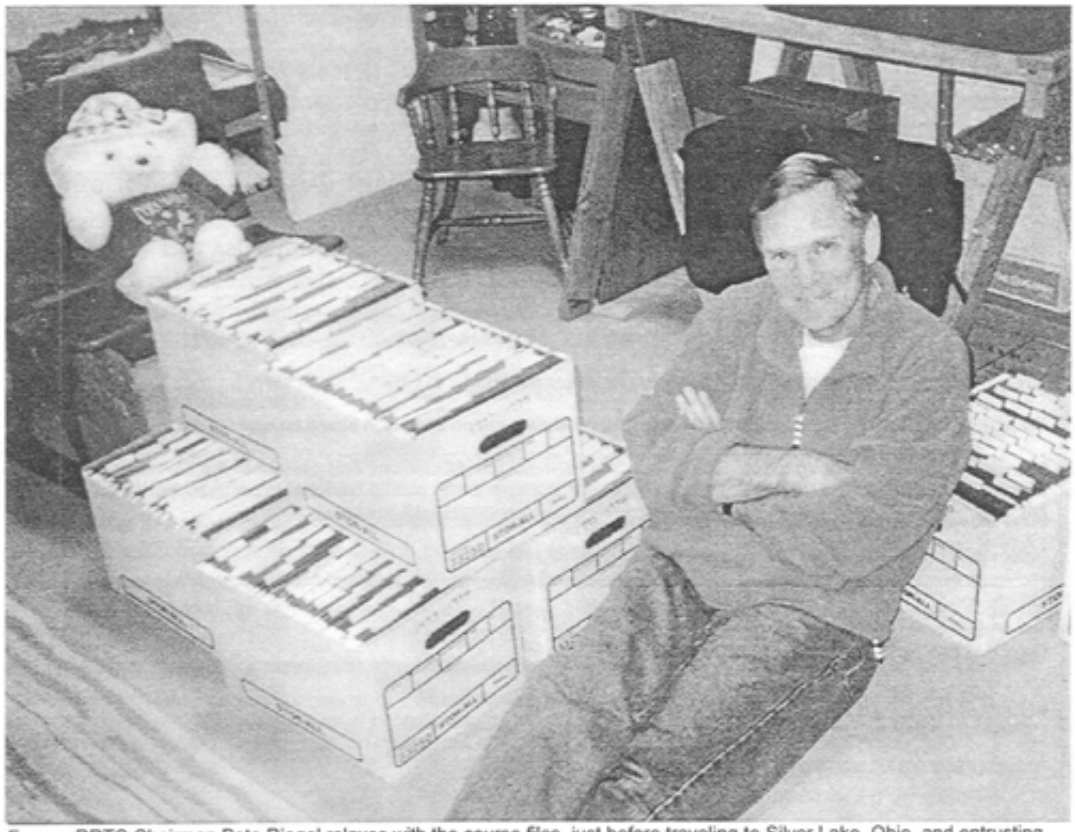
Measurement News

March 2000 Issue #100

CENTENNIAL ISSUE!



Former RRTC Chairman Pete Riegel relaxes with the course files, just before traveling to Silver Lake, Ohio, and entrusting them to Karen Wickiser's care. The transition is now complete, and Mike Wickiser is flying solo as RRTC's new Chairman and Karen as Registrar of Courses. Details inside.

PETE RIEGEL RETIRES

THE CHAIRMAN'S CORNER

This page by Mike Wickiser

Pete Riegel, the name that has been synonymous with course measurement to me since I started measuring race courses 15 years ago, has retired as RRTC Chairman. Now don't get too excited, Pete has only retired from the Chairmanship of the RRTC. He is still the *Measurement News* editor, Statistician, and Advisor to the RRTC. Sounds like he is as active as ever to me. With Pete's retirement, Joan Riegel has also turned over the position as Registrar of Courses to a successor.

Together Pete & Joan have accomplished quite a great deal. The current system of measurement has been devised under Pete's leadership. A course list of over 19,000 accurately measured courses and certificates is available to anyone to anyone interested. Course measurement is certainly healthy and robust. I feel compelled to thank the Riegels, both Pete & Joan for their long time efforts and accomplishments.

For those who don't subscribe to MNForum, Pete & Joan's retirement was effective early in February with Pat Rico's appointment of Mike Wickiser as Chairman of the RRTC. That's me. The position of Vice Chairman East has been filled by Paul Hronjak. Paul has been active in USATF for over 20 years holding various positions along the way. He has been the North Carolina certifier since 1996. With Pete & Joan's retirement, my wife Karen is the new Course Registrar.

Eastern State Certifiers should be sending measurement certificates to Paul Hronjak. Checks for filing should be made out to Karen Wickiser. The entire certificate files have been transferred to our home and can be accessed the same as before. Just contact myself or Karen.

Chairman's Comments:

I would be remiss if I didn't make a few comments coming on as Chairman. Thank you all very much for the well wishes since taking over. Course measurement is a healthy program. I plan on working to keep it healthy. Anyone expecting sweeping changes can look elsewhere. To date, I have been working with Pete & Bob Baumel to become familiar with handling and posting of the course list. In the past I always just downloaded the list or searched it for a course. Believe me there is a lot of work that has been done by Pete & Bob to make this happen.

Pete is retired, while I work full time. This will mean from time to time that response time will not be as quick as it has been with Pete. Not that I plan on being slow, just that it will not be possible to respond instantly in every instance. This was the standard set by Pete. With email and Fax available I believe this should be no problem.

Felix Cichocki, Arizona Certifier recently passed away. Felix was one of the "good guys". I will remember his energy and that great big smile.

Jim Irish has taken over as certifier for Arizona. Welcome aboard Jim!

Mr Peter S. Riegel
3354 Kirkham Road
Columbus, Ohio 43221

Dear Pete,

As you know Mike Wickiser has accepted the appointment to be Chair of the Road Running Technical Council of USATF. Thank you for the recommendation.

I would like to thank you and the woman by your side, Joan, for your leadership in the course certification process. Reading the Council's Journal, that you were kind enough to send me, I realized just how much work and effort it took to administer the program.

The Road Running Technical Council is one of the jewels of USATF.

Mike has indicated that you will continue to participate – Great.

Peter, Joan – Thank you for a job well done.

Sincerely,

Patricia F. Rico
President
USA Track & Field

cc. Craig Masback

PLEASE REPLY TO: PATRICIA F. RICO, *PRESIDENT*
89 LEXINGTON DRIVE, CROTON-ON-HUDSON, NEW YORK 10520
HOME: 914/271/4252, FAX: 914/271/8329

SUMMARY OF RECENT CHANGES

- Pete Riegel retires as Chairman, RRTC. *Measurement News* will continue.
- Mike Wickiser is new Chairman, RRTC
- Paul Hronjak is new Vice-Chair, Eastern US
- Jim Irish is Arizona certifier, replacing the late Felix Cichocki
- Jay Wight is Wisconsin certifier, replacing Bill Grass, who has been out of touch for months.

Following from the RRTC Website (http://users.hit.net/~bobbau/rrtc/

Road Running Technical Council

Late-Breaking News

Pete Riegel resigns as Chairman; Mike Wickiser to be new Chairman

2000-02-02: Less than two months after announcing that 2000 would be his last year as RRTC Chairman, Pete Riegel has submitted his resignation and designated Mike Wickiser as his intended replacement. Following is a statement issued by Pete:

Dear Friends,

On January 31, I sent a letter to USATF President Pat Rico resigning the office of Chairman, RRTC, and recommending that she appoint Mike Wickiser as Chairman.

I have known Mike for 15 years, and have watched him grow in his capabilities as he performed jobs of increasing responsibility within our Council. Following is a brief list of the things he has done:

Measured 88 courses since 1986, including 1996 Olympic Marathon.

As Indiana Certifier, he has certified 223 courses since 1988.

Appointed IAAF "A" level measurer since 1990 ("A" is the highest IAAF measurer grade).

Participated in group measurements of the USATF Men's Olympic Marathon Trials 1988 & 1992.

Organized the measurement of USATF Men's Olympic Marathon Trials 2000 course.

Served as RRTC Validations Chair 1991-1996.

Served as RRTC Eastern Vice-Chair since 1997.

Most importantly, Mike is a capable and decent person. I like him. I don't know anybody who can't get along with him.

I talked about resigning with Pat at the USATF Annual Meeting, and she said that she generally followed the recommendation of the outgoing person when it came to replacement, 99 percent. So I expect she will appoint Mike. I asked that it be done immediately, but the mills take a while to grind, so it is not yet official.

Along with the chairmanship I will be reassigning the office of Course Registrar to Mike or his wife Karen. I have found it to be an immense help to have the course certificates instantly at my fingertips, and I can't imagine doing the job properly without them.

I will continue to publish *Measurement News*, and will retain my office of AIMS/IAAF International Measurement Administrator, Americas.

I intend to be around for a while, and not entering a monastery any time soon. I hope everybody knows what a pleasure it has been for me to serve with you, and what a satisfaction it has been to see us become the group we are. We do well, and I'm proud to be among us.

Mike and I are beginning to work out the details of an orderly transition. This note is one of the first steps.

I hope everybody will give Mike the same help that you have given me. I intend to fully support him in the work. The job can't be done unless we pull together.

Pete Riegel

It's Official -- Mike Wickiser is now RRTC Chairman!

2000-02-08: Pete Riegel announced today that he had a conversation with USATF President Pat Rico, and Mike Wickiser is now the Chairman of the Road Running Technical Council, USATF, effective immediately. Pete and Mike still have some details to work out, but as of now, Mike is in charge.

Paul Hronjak is Vice-Chair East; Karen Wickiser is Course Registrar

2000-02-09: Mike Wickiser's first official act as new RRTC Chairman was to appoint the new Vice-Chair East and new Course Registrar:

Paul Hronjak is the new VC East. According to Mike: "Paul has been active in TAC, USATF, and the RRTC for over 20 years. He is president of NC USATF, NC Certifier since '96, and a masters level official. Paul has been measuring since 1980 with well over 70 courses to his credit. The '96 & 2000 Men's Marathon Trials are among his validations credits among others. The list of his work in the sport goes on and these are but the highlights. I am certain that Paul will do a great job as Vice Chairman East."

Karen Wickiser is the new Course Registrar. Mike wrote: "The certified course list is an item that both Pete and I feel is necessary to have available to the Chairman. For this reason, Karen Wickiser will become the new Course Registrar, replacing Joan Riegel. Karen is of course my wife of 27 plus wonderful years. She is also a runner and puts in a lot more miles than I ever do. No stranger to course measurement, over the years Karen has attended measurement seminars and measured several courses. She understands measuring and looks forward to working as Registrar."

Meanwhile, **Pete Riegel,** although retiring as RRTC Chairman, will continue an active role on the Council. Pete continues as Editor of Measurement News, Statistician, and Advisor.

Effectively immediately, all Eastern State Certifiers should begin forwarding certificates to: Paul Hronjak, 4413 Pinehurst Drive, Wilson, NC 27896. Paul is also available at (252) 237-8218.
Checks for certificate filing fees should be made out to Karen Wickiser.

* * * * * * * *

From John Disley

Question: How do I patent a procedure for putting solid tyres onto a wheel without effort?

After wrestling with a mountain bike wheel and GREENTYRE on the carpet for twenty minutes I gave up. I wasn't within 15" of getting the tyre in place. So I decided to warm the tyre in hot water - but found difficulty in keeping the 'snake' in the bath, and hot water at my Welsh cottage is precious. So I then had a brain-wave and tied the tyre up with string so it fitted the micro-wave. Then I gave it 50 seconds on medium-high. Got back on to the carpet and with just one 'tie' was able to put the tyre on in less than a minute.

It feels tight - hasn't come off on the local forest roads. I'm happy.

But it obviously offers an entirely new f ield of research for Mike Sandford and his ilk to ascertain how much co-efficient of something or other I have destroyed. At least I still have my fingers and thumbs intact, not to mention the tyre-levers!

2001 IAAF WORLD CHAMPIONSHIPS - EDMONTON, ALBERTA, CANADA

Pete Riegel has been appointed IAAF Road Course Measurer for the Marathon and Racewalk courses of the World Championships, and is now working with the organizers. This happened only recently, and nothing more is known. A group measurement and/or a seminar will likely be held along with the official measurement.

More information will be published here and in MNForum as it becomes available.

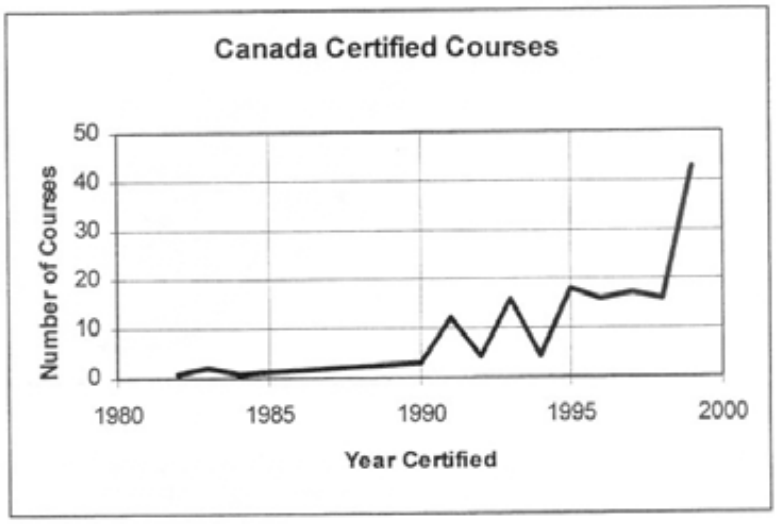
Elsewhere in this MN, see a preliminary map of the Edmonton Festival Marathon by Canadian measurer John McBean, who will be laying out the World Championships course.

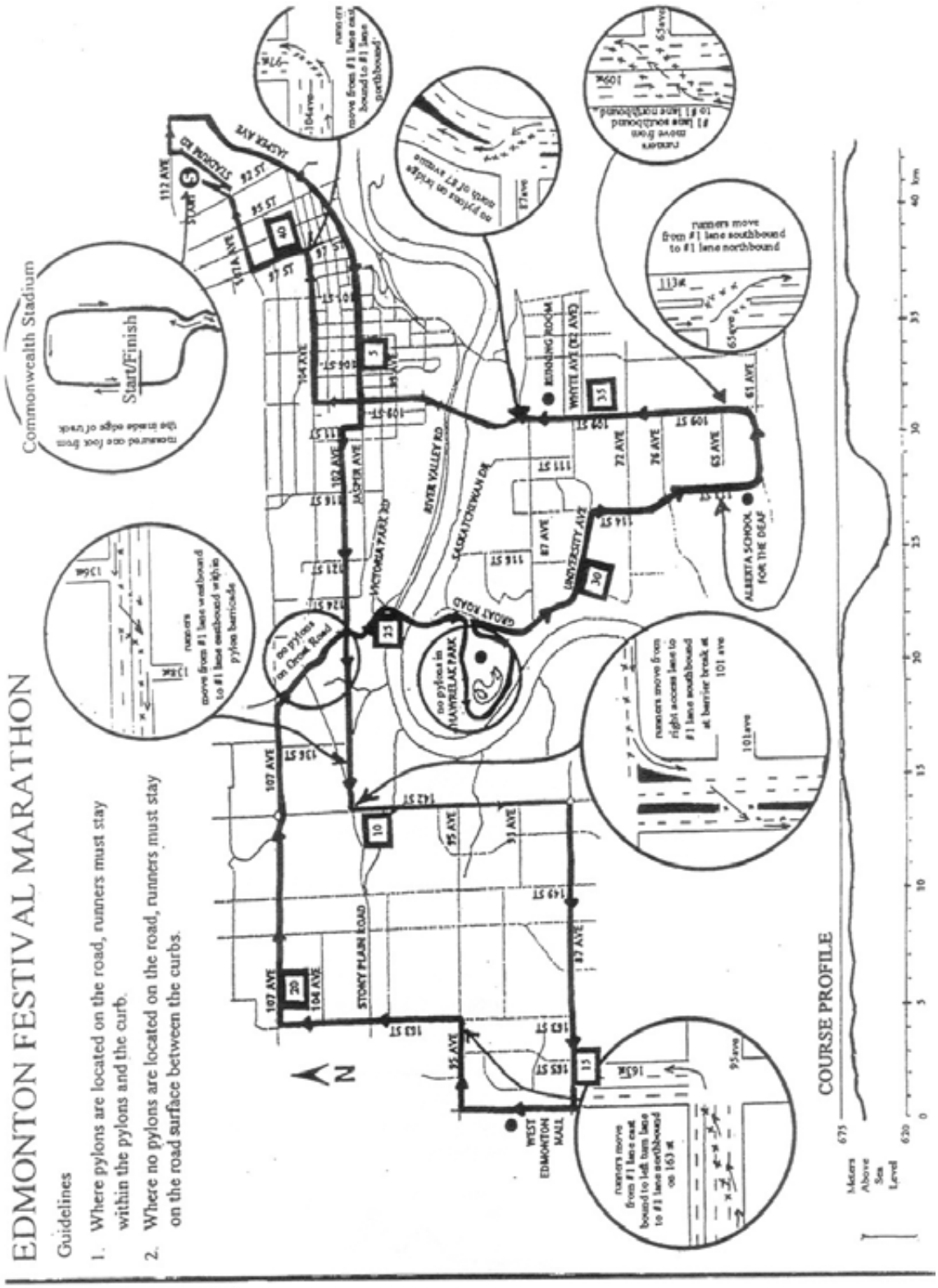
COURSE MEASUREMENT IN CANADA

According to the Canada course list published in the Canadian Road Running Course Measurers online web page (http://www.mbnet.mb.ca/~llacroix/crrcma.html), Canada has been certifying courses since 1982. However, for most of that time the system was sporadic in its operation. This has begun to change, and the Canadian system now appears to be in the beginning of a growth period, with Bernie Conway in charge. It will be interesting to see how it develops.

The Canada list contained 157 certified courses a month ago when this was written. These courses have been measured by 15 different measurers, and certified by 5 certifiers, three of whom are Canadian citizens. Of the 157 courses, 132 are located in Ontario, where Bernie Conway and Dave Yaeger live. Bernie and Dave have 106 Canadian certified courses between them. British Columbia has 10 courses, most created this year. Manitoba has 15. The rest of the Canadian provinces are devoid of certified courses.

Just as in the US, measurers are sometimes widely scattered, and it is difficult for them to get together for instructional seminars. Because of this, Canada has opted to use the US model as a guide. Using the same measurement book and forms, Canadians may read the book, become wise, measure, and send their data to a certifier, who then issues a certificate and enters the course on the Canada course list. No special qualification is required to measure in Canada. As in the US, anyone may do it.





This map by John McBean, not yet complete, is of the course of the Edmonton Festival Marathon, which will be used as a test course for the 2001 IAAF World Championships Marathon

Road Race Certification

Was the last race you ran in BC accurately measured?

If your last race was the "First Half" Half Marathon or one of 7 other certified races you can be sure it was, otherwise you just don't know. At the present time there are only 8 races certified in BC. If the race can show a certification number you can count on its accuracy. If the race cannot, it may or may not be accurate.

History of Road Race Certification in Canada.

Athletics Canada is the national sport governing body for track and field, cross country and road running in Canada. In August last year Athletics Canada gave its blessing to a new structure which puts all responsibilities for course measurement and certification into the hands of measurers and certifiers. Bernie Conway of London, Ontario is now the nation's head certifier and national course registrar. Until last year there was no formal certification process available in British Columbia and most of the other provinces and territories.

The Athletics Canada/Run Canada Committee has established a course measurement and certification procedures manual which draws on 30 years of experience in measuring road race courses accurately in the USA and in other parts of the world. These procedures are now used by the International Amateur Athletic Federation (IAAF), the Association of International Marathons and Road Races (AIMS) and the USA Track and Field Association (USATF). The procedures describe a measurement and certification process that endeavours to make race courses as accurate as possible and to ensure, in the interests of record keeping, that race courses are not short.

Who can measure Road Race Courses?

IAAF/AIMS have established a three tier qualification for road race measurers. Last May, BC Athletics hosted a two day measurement seminar which was put on by Pete Riegel, the then Chair of the USATF Road Running Technical Committee and the chief course certifier in the USA. The seminar was attended by 21 people who all became IAAF/AIMS measurers, grade "C". Eleven of these measurers were from BC while the others were from Alberta (3), Saskatchewan (1), Manitoba (2), the USA (3) and Mexico (1).

The Run Canada Committee procedures do not require a measurer to hold IAAF/AIMS qualification, but the certifier must be satisfied that the measurer has followed all the requirements laid out in the procedures and that all data and maps submitted to support the application have been properly and accurately prepared.

This means you do not need to be IAAF/AIMS vetted to measure a road race course in Canada. The system is set up so that anyone at all who wishes to measure may do so. You obtain a copy of the measurement book (see the Canadian web site), read it, become wise, and then follow the outlined procedures. Send your paperwork to the certifier, and he will either send a certificate forthwith, or tell you what else is needed.

BC Certified Road Races

Event	
Vancouver International Marathon	BC-1999-001-PR
Hot Sands Marathon	BC-1999-028-PR
Westwood Plateau Run	BC-1999-032-PR
Midsummer 10 km	BC-1999-040-PR
Colony Farm Fun Run	BC-1999-050-PR
Royal Victoria Marathon	BC-1999-053-PR
Valhalla Pure	BC-2000-002-BDC
"First Half" Half Marathon	BC-2000-004-BDC

There are a number of qualified measurers in BC who are willing to measure and obtain certification for road race courses. Interested race directors should contact BC Athletics (Larry Nightingale) for more information or consult the Run Canada Committee web site at: http://www.mbnet.mb.ca/~llacroix/crrcma.html.

What is a BC Athletics Sanctioned race?

BC Athletics sanctions road races in British Columbia which means that the event is insured and that the race organization has agreed to certain safety considerations. BC Athletics does not require a race course to be certified in order for the event to be sanctioned, nor does BC Athletics certify road race courses.

BC Athletics does, however, recommend that road races be accurately measured and certified in accordance with the procedures described here.

How can I be sure my next race will be accurately measured?

The Run Canada Committee has put a certification process in place, but it is up to runners to decide the importance of accurate measurement to road racing. If runners look for and participate in races that are certified, race directors will ensure that they are.

Road races that are certified in Canada will receive a certification number (the First Half certification number is BC-2000-004-BDC). Look for a certification number on race brochures and other advertising.

Paul Adams
IAAF/AIMS Measurer
February 21, 2000

This article was prepared for publication in ***BC Athletics Record.*** Used with permission of Paul Adams

The Measure of a Race

How to make sure your next 5K really is 5K

By Jim Gerneck

You've just crossed the finish line of your local holiday 5K and, like most of the other runners around you, you hit the stop button on your watch. After a few moments, when your breathing slows and your eyes focus, you check your time. Wow, a PR by 35 seconds! All that speedwork and the $80 you spent on those new racing flats must really be paying off.

Then you look at your splits and an element of doubt begins to surface. Did you really run that last mile 30 seconds faster than the others, even though it was uphill and into the wind? A little rational thought leads you to realize you've fallen prey to that dreaded runner's malady, Curse of the Mismeasured Course.

The CMC strikes in events from neighborhood fun runs to the World Championships, negating personal and world records alike, making the effort of racing worth nothing more than a hard workout. If you really want to see a runner's attitude do a 180 from elation to despair, tell him the course he just set a PR on is short.

If you really want to see a runner's attitude do a 180 from elation to despair, tell him the course he just set a PR on is short.

You can, however, avoid such heartache by sticking to courses that are certified by the Road Running Technical Council of USA Track & Field. Being USATF Certified means a course has received the Good Road Racing Seal of Approval, and is guaranteed to be at least the advertised distance (actually, it may be a bit longer, but more on that later). Be sure not to confuse "certified" with "sanctioned"; the latter only means the event will be conducted under USATF guidelines and insurance policies, but says nothing about the accuracy of the distance.

A legacy of measurement ...

Accurate course measurement in the U.S. began through the efforts of Ted Corbitt, a member of the National Distance Running Hall of Fame's inaugural class of 1998. Although more renowned for his running, Corbitt's certification program directly touches the efforts of runners at every level and may be his most lasting legacy. In fact, for average runners who question what they get from USATF, certified courses is probably the most tangible benefit.

The U.S. course certification process is probably the most extensive and rigorous in the world. At the same time, it is the most democratic: Anyone with a bicycle, basic math skills and running sense can measure a course. The only special equipment needed is a Jones/Oerth counter, a device that attaches to the bike's front wheel and measures fractions of a revolution. Without delving into the technical aspects, suffice it to say that following the certification procedures results in a course that is at least the stated distance. It may be a bit longer, because a .1% short course prevention factor is added in, meaning a 5K could be up to 5.005 meters long.

... and mismeasurement

Many courses produce fast times—and ultimately come up short—because they're not measured to certifiable standards. An automobile odometer is not as accurate as a calibrated bike. Also, some race directors simply ride on one side of the road, several feet off the curb. Your high school geometry tells you at the difference between a line that hugs the curb and one that follows the center of the road could be 20 feet or more! Multiply that by the number of turns in a race and you can see where your apparent PR came from.

PUZZLE OF THE MONTH

Dear Pete:

I finally posted a copy of a photo to you thinking you might want to use it in MN, maybe as a Puzzle of the Month (if I'd pulled my finger out a couple of months ago I might have made the deadline for THAT MN). There's no prize for guessing who it is, but with all the hair flapping around, people might wonder when and where it was. Not wishing to spoil any curiosity you, personally, may have, I'll send the short explanatory caption soon. My question would be:

Where and when did this hair have 1! LAPS TO GO and what colo(u)r was/is it?

Regards,

Malcolm Heyworth

MEASUREMENT *facts*

The Road Running Technical Council of USA Track & Field has certified almost 18,000 courses in the U.S., and continues to add approximately 100 a month. The most often measured distance is 5K (almost a third), followed by 10K, 8K and the marathon.

Each course is given a unique alphanumeric code denoting state, year of certification and certifier. This code should appear on the entry form of any event held on a certified course. A complete list of courses can be downloaded from the RRTC Web site (www.hit.net/~bobbau/rrtc). You can also use the certified course search engine at USA Track & Field's Long Distance Running Web site (www.usaldr.org). Copies of individual certificates are available for $2 each from Joan Riegel, 3354 Kirkham Rd., Columbus, OH 43221.

Course Measurement Procedures, the bible of course measurement, is available from the USATF Book Order Dept., PO Box 120, Indianapolis, IN 46206, and through the RRTC Web site. A similar list of Canadian courses is available at www.mbnet.mb.ca/~lacroix/cmcma.html

This also explains why some runners cover significantly more than a course's measured distance. Running along only one side of the road, no matter which way it turns, adds distance to your race. A certified course takes the shortest possible route, which is a line that cuts all the tangents one foot from the curb. While safety might preclude following this line in smaller races, in events where the roads are closed to traffic anyone who fails to do so is running unnecessarily long.

Even the elite aren't entirely safe from inaccurate courses. Officials at the 1995 World Championships sent the women marathoners out of the stadium one lap early, and the mistake wasn't caught until everyone began finishing in personal best times. Also, several world road bests have been negated because the runners were misdirected or the roads mismarked.

So when your training is reaching a peak and you're ready to set some new personal bests, be sure to enter events that are held on certified courses, and get a copy of the map to ensure the course is set up correctly. You wouldn't run a race that didn't record your time to the second, so why should the distance be any less exact?

HOW HIGH IS MT. EVEREST?

Source: *The Search for Mallory & Irvine* by Peter Firstbrook - Contemporary Books, Chicago, 1999

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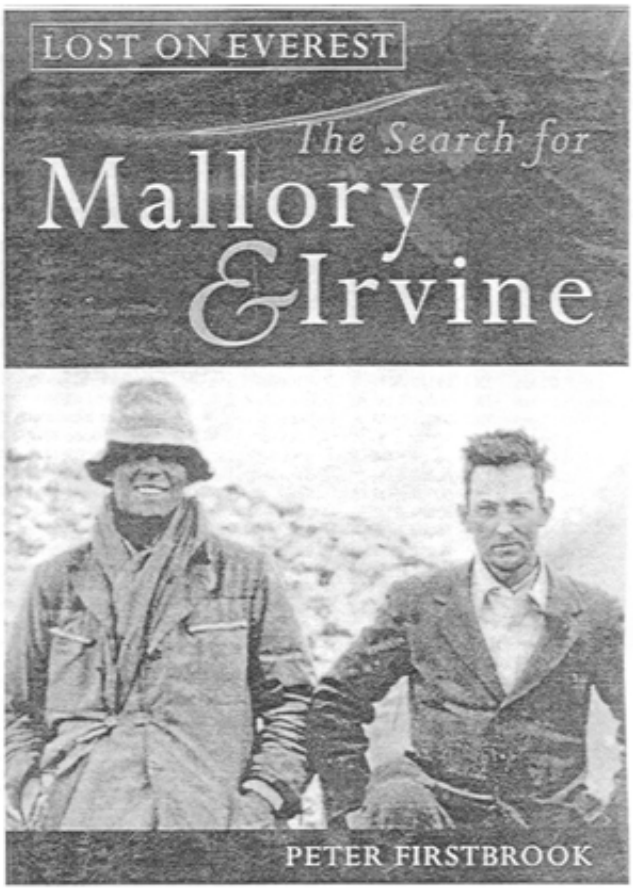
There is controversy to this day over the precise height of Everest because of variations in snow thickness and deviations in gravity and light refraction. In the 1950s the original calculation was revised upwards to 8848 metres (29,028 feet). There is still no certainty, however, that this is the correct height. Colonel S. G. Burrard of the Grand Trigonometrical Survey once remarked: "All observations are liable to error; no telescope is perfect; no levelling instrument entirely trustworthy; no instrumental graduations are exact; no observer is infallible."

This is prudent advice for any surveyor, but what nobody realized at the time was that the Himalayas are actually growing higher, sometimes by as much as 2.5 centimetres (1 inch) a year, which is fast by geological standards. Inevitably erosion and landslides take their toll, but Mount Everest and all the mountains around it are slowly getting taller. Burrard's words rang particularly true when the British surveyors began to discover discrepancies in their calculations on reaching the foothills of the Himalayas. For example, the distance between the town of Kaliana and Kalianpur, nearly 640 kilometres (400 miles) to the south, was first measured by triangulation, and then checked by direct surface measure- ment. The two results differed by almost I 50 metres (500 feet), which was an unacceptable margin of error for the GTS (Grand Trigonometrical Survey).



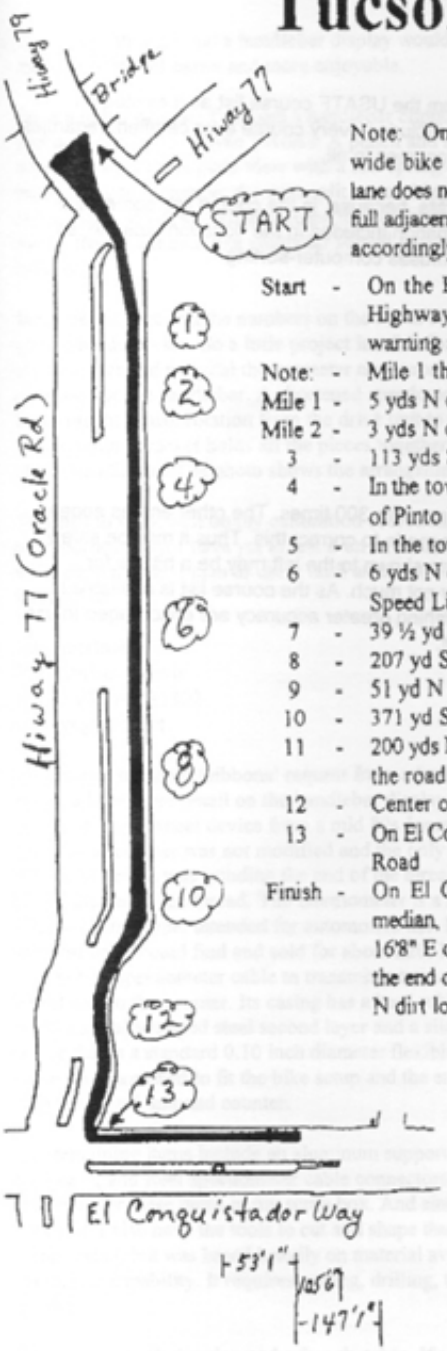
This dilemma became known as the Indian Puzzle, and after months of speculation, the surveyors eventually discovered where the problem lay. They had reasoned that if the Earth's mass was homogeneous, its gravitational attraction would be uniform and the plumb bob under the theodolite would hang perfectly perpendicular to the surface of the planet.

However, the Earth is not uniform, and the surveyors allowed for this by estimating that the huge mass of the Himalayas would deflect the plumb line on their theodolite by a quarter of a degree. This, as it turned out, was over-generous: the mountain range did deflect the plumb line, but only by one-twelfth of a degree of arc.

This simple error was easily corrected, but it nevertheless had a profound effect and began to influence thinking on the geological formation of mountains. The French scientist Pierre Bouguer originally proposed the idea that mountains are made from rock which is less dense than the surrounding lowlands. If this were true, it could account for the gravitational pull near the Himalayas being less than anticipated.

Tucson Half-Marathon

USATF Certification
AZ-99012-FC



Note: On Hiway 77 - the Oracle Hiway, the course is restricted to the wide bike path / Hiway Emergency Lane. In the few instances the bike lane does not exist, as thru the Town of Catalina, runners will also have the full adjacent lane. Cones will be placed along the full length of the course accordingly.

Start	-	On the Bridge on Highway 79 approximately ½ mile from the intersection of Highway 77, 39'6" N of the S end of the bridge and also of the yellow/black warning sign of the S side of the bridge
Note:	-	Mile 1 thru 12 are all on Highway 77 - the Oracle Highway
Mile 1	-	5 yds N of Junction 79 ½ mile ahead sign
Mile 2	-	3 yds N of a vertical white reflector
3	-	113 yds S of flashing yellow light S of Saddlebrooke Rd..
4	-	In the town of Catalina at the center of Catalina Recreation building; or 25 yd S of Pinto Lane
5	-	In the town of Catalina at the center of N driveway to the Catalina Tire store
6	-	6 yds N of No Parking sign at N end of school baseball diamond; or 77 yd S of Speed Limit 45 sign
7	-	39 ½ yd N of Detention Center Do Not Stop For Hitchhikers sign
8	-	207 yd S of the single overhead power line crossing the hiway.
9	-	51 yd N of 55 Speed Limit sign
10	-	371 yd S of the large overhead flash lights for Tangerine Rd.
11	-	200 yds N of N entrance to Allied Signal; 10 yds N of driveway to stables across the road
12	-	Center of intersection of First Ave
13	-	On El Conquistador 23.4 yds E of Walk/No Walk signal pole on corner of Oracle Road
Finish	-	On El Conquistador (the entrance to the El Conquistador Resort) N of the median, 13'4" W of the 5th tree W of the driveway entrance to the N dirt lot; or 16'8" E of the 6th tree; or 53'1" E of the light pole in the median; or 105'6" W of the end of the median; or 147'1" W of the red pole at the driveway entrance to the N dirt lot.

FELIX'S LAST COURSE

MAP OF THE MONTH

Felix Cichocki was measuring right up to the end, and it's appropriate to remember him with this small recognition. Thanks for everything, Felix.

Felix Cichocki
Oct 199

US CITIES WITH 100 CERTIFIED COURSES OR MORE

City	State	Number of Courses
Chicago	IL	300
Dallas	TX	291
Tulsa	OK	279
Houston	TX	253
	OH	1
Washington	DC	230
	GA	2
	IN	2
	NC	2
	PA	2
Los Angeles	CA	168
Oklahoma City	OK	156
San Diego	CA	155
Seattle	WA	140
Wilmington	DE	135
	NC	12
	OH	1
Columbus	OH	112
	GA	15
	IN	10
	WI	2
San Francisco	CA	132
Denver	CO	131
Wichita	KS	129
Portland	OR	98
	ME	26
	CT	1
	TN	1
Raleigh	NC	108
Charlotte	NC	104
	MI	1
Miami	FL	100

This list was compiled from the USATF course list as it existed on December 31, 1999, and includes every course ever certified, regardles of present status, 18768 courses in all.

It is not completely accurate, because, in the course list, some cities have supplemental information included in the "location" column, as as shown below. This confuses computer-sorting.

Chicago
Chicago 3.5
Chicago 3.5M
Chicago 3.5M
Chicago 8.9
Chicago Heights
Chicago Hts

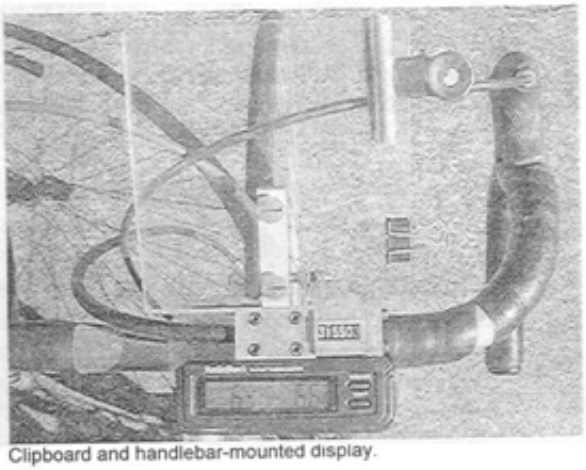
In the above, "Chicago" appears 300 times. The other entries appear once each. No effort was made to correct this. Thus it may be safely assumed that the count as shown to the left may be a bit low for some cities, but probably not much. As the course list is available to all for research, those wishing greater accuracy are encouraged to use the course list to obtain it.

HANDLEBAR DISPLAY

I've always thought that a handlebar display would make a measurer's chores easier and more enjoyable.

For a number or years I've used a handlebar clipboard, probably similar to Wayne Nicoll's. A pencil and small notebook are held in plain view with a few spring clips. No more trying to remember the next split or reaching in a pocket at each stop. It works well and keeps the notebook secure. A mount from a defunct bike computer served as the attachment bracket.

But times change and the numbers on the Jones counter were getting harder to see. So a little project last fall fixed that. A six digit counter and a digital thermometer now accompany the clipboard on the handlebar. A shortened speedometer cable transmits the wheel rotation from the drive unit to the counter. An aluminum bracket holds all the pieces together and mounts on the handle bar. The photo shows the arrangement.



Clipboard and handlebar-mounted display.

It seems to work well on my calibration course and around the neighborhood, but I have yet to test it on an actual measurement ride. I plan to use it until an electronic version is a available.

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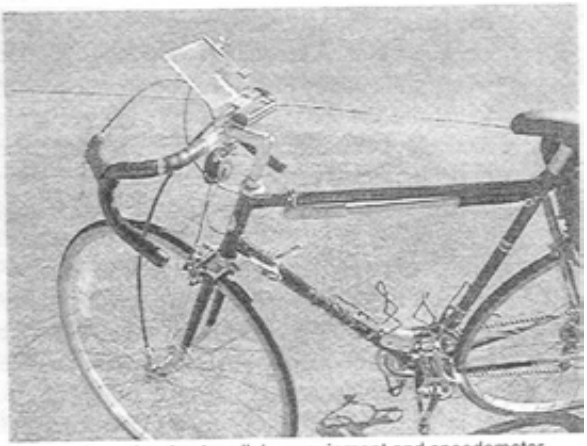


Overall view, showing handlebar equipment and speedometer cable leading to Jones counter drive.

In response to Roger Gibbons' request from a few days ago, here's a little more detail on the handlebar display. It uses the digital unit and wheel device from a mid 80s Jones counter. The digital counter was not modified and the only change to the wheel device was grinding the end of the threaded section perpendicular to the thread. The thermometer is a Radio Shack, inside-outdoor type, intended for automotive use. It was the smallest one I could find and sold for about $20. I used an automotive speedometer cable to transmit rotation from the wheel unit to the counter. Its casing has a hard rubber outer shell, a spiral wrapped steel second layer and a slick plastic inner liner. Inside that is a standard 0.10 inch diameter flexible steel drive shaft. The cable was shortened to fit the bike setup and the ends modified for mating with the wheel unit and counter.

The remaining items include an aluminum support bracket, a polycarbonate clipboard, and steel speedometer cable connectors. Fortunately I had materials for these items in my scrap box. And since I'm a metal working hobbyist, I also have the tools to cut and shape them. The design is not complicated, but was based heavily on material availability and my machining capability. It requires cutting, drilling, tapping, turning and milling.

I do have a rough drawing and a few sketches. If anyone is interested, send me your postal address for a copy.

Closeup of speedometer cable attached to Jones counter drive.

Time and metre

For this first MN of the new millennium (#99 may have had January written on the cover, but all contents derived from last year) I would like to offer, secondhand, some observations which go to the root of the measurement craft (confession: I got them from a Christmas present book - a novel called *The Horizontal Instrument* by Christopher Wilkins and published by Doubleday, a division of Transworld Publications, in 1999). Not that what follows may change anything that we do, or even how we think about what we do. It just seemed interesting to me.

Hugh Jones

What is this 'second' to which we so casually refer? If you heat liquid caesium-133 in an oven, leaving a tiny hole through which atoms can escape, you can bombard them with microwaves until they are so excited that they produce a current which can be counted in an electron multiplier. Adjusting the microwaves until the maximum current is reached creates a precise frequency of 9,192,631,770 cycles per second. That is the 'tick' of an atomic clock. But what we traditionally call a 'second' is nothing more complex than a calculated fraction of the time taken for one complete rotation of the earth. There are precisely 86,400 of them in an average day but, imprecisely, there are somewhere between thirty-one and thirty-two million of them in any given year. A second is a very rough unit indeed with which to work. Not only is there not an integral number of days in one complete earth orbit (which is why leap years were invented to balance the books), the length of those days is increasing as the earth slows. By a meticulous examination of the growth histories of coral reefs, using them as sort of paeleolontogical clocks, we can confidently estimate that 600 million years ago there were 425 days in a year, which means that the days were shorter, or the years were longer, or both.

Since the establishment of International Atomic Time on the 1st of January, 1958, the earth and that original atomic clock have drifted thirty seconds apart in their calculations. So *now* what time is it? The planet is in continual disagreement with its best clocks, so how are we to bring them into harmony? Here pragmatism takes over and it is the clocks rather than the planet which get adjusted, because, although correcting an atomic clock may not be as simple as setting your bedside alarm, the alternative would present greater difficulties... [pp.96/97]

The natural time kept by the earth is known as Universal Time and it was agreed in Washington, DC, at the International Meridian Conference of 1884 that each new day on the planet should dawn first on the line of the Meridian, a line defined as 'the centre of the transit instrument at the observatory in Greenwich'. The instrument referred to is the Airy Transit Circle Telescope, whose principal purpose is to establish solar time (and, thereby, GMT) by marking the precise moments when a particular star, the sun, passes through its vertical sight line.

Because of the unreliability of the earth's rotational rate, the sun rarely shows up when it ought to, at least not according to the reckoning of the atomic clock at the International Weights and Measures Office in Paris. Over recent decades, the sun has been 'slow', but there have been periods in the past, such as the years between 1838 and 1858, when the sun showed up early.

Because of this wayward behaviour on the part of the planet, the atomic clock is forced to suffer the periodic indignity of being 'corrected' by human intervention. Whenever the gap becomes embarrassingly large, as large as nine-tenths of a second sometimes, a 'leap' second is added to International Atomic Time (known by its French initials as TAI), creating Co-ordinated Universal Time (or UTC). So it has come about that the world in general conspires to operate with a measurement of time which agrees with neither the natural motions of the planet nor the most accurate known clocks. We have, instead, a bodged compromise.

To confuse matters further, the Airy Telescope at Greenwich, being fixed on the Meridian, can also be used to mark the transit of stars other than the sun, providing us with a reading of what is called sidereal time. This accords with neither atomic time nor with solar time. Furthermore, since the observed stars are all in motion, so their positions relative to the Solar System and to each other keep changing... [pp.100/101]

Ultimately it hardly matters, becuse the units of time measurement are not externally imposed. It is, and always has been, a matter of choice. If we elect to divide a terrestrial day into 86,400 bits and call each one of those a second, then that is what a second is for us. If we choose to count how long it takes 9,192,631,770 caesium atoms to be squirted through a hole and call that a second, we are equally at liberty to do so. Lengths of time are as arbitrarily and flexibly divisible as lengths of yarn.

In 1709 the French National Assembly estblished the length of a metre as being one ten-millionth of the distance between the equator and the north pole, as measured along a longitudinal line running through Paris. In 1983 it was redefined as the distance travelled by light in 1/299,792,458 of a second, a distance which is determined by how long we decide that a second should last. As the definition [of a second] changes, so does the length [of a metre]. (There have been suggestions that it would be tidier to round up the figure for light speed to 300,000,000 metres per second, but this would require modifying all the standard metre measures, and has so far been resisted.)

It is a ruthlessly self-referential system. We might hold a metre rule up to a prize parsnip and say, 'This parsnip is one metre long', but we could with equal conviction state, 'This metre is one parsnip long.' A ruler cannot be a parsnip, but a parsnip can, with our connivance, be a ruler, because the quality of measurement lies in that aspect of the relationship between objects which we choose to recognise from within ourselves, from our singular point of view. A parsnip does not 'possess' length any more than an event 'possesses' time. At its crudest, we point at one end of the parsnip and then at the other, and that which lies between the two points we call 'space'. Just as a man dying in the same bed where he slept as a child can look back to his infancy, and that which lies between then and now he calls time. [pp.103/104]

NEW MEASURERS

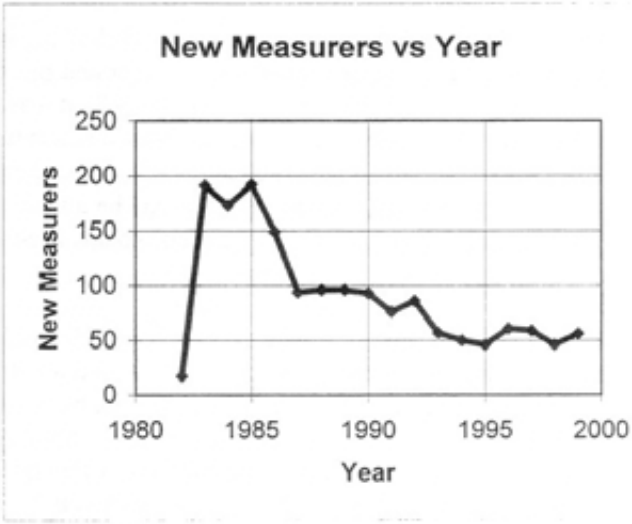
The course list identifies the measurer of each course with first initial and surname. By sorting out the duplicate names for each year, we can obtain the number of people who were measuring in that year. If we look at the next year, we find more people who have ever measured. For each year, the number of people who have measured is compared to the number of people who have measured since 1982. The increase represents new measurers.

Some inaccuracies obviously exist. One surname may represent several people with the same name. Typographical errors will result in a few extra names creeping in. Still, without doing a certificate-by-certificate analysis the results show the rate at which new measurers are being produced in the US with "reasonable accuracy."

In the early 1980's the SCPF of 1 m/km was mandated, and all courses then listed were decertified. Already-experienced measurers started to produce new courses. Many of these people remained active, and were joined by others.

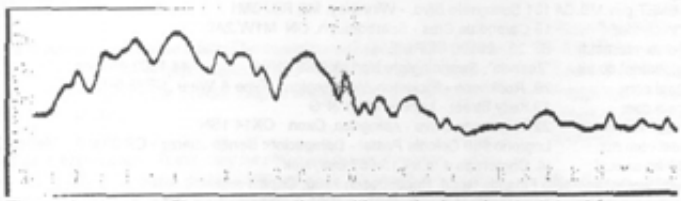
Now, things seem to have stabilized, and we are producing about 50 new measurers each year.

Year	Number of Different Surnames	New Surnames
1982	17	17
1983	208	191
1984	381	173
1985	573	192
1986	722	149
1987	816	94
1988	912	96
1989	1008	96
1990	1101	93
1991	1177	76
1992	1263	86
1993	1320	57
1994	1370	50
1995	1416	46
1996	1477	61
1997	1536	59
1998	1582	46
1999	1638	56

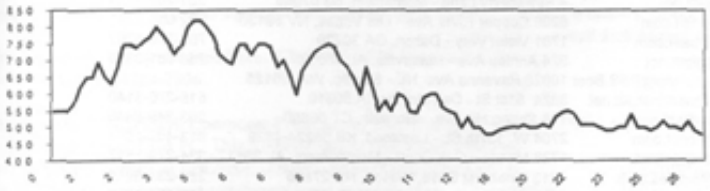


COURSE PROFILES - PLOTTING ERRORS

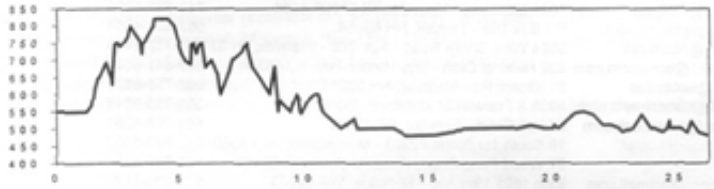
The course profile as it appeared on the web page. It's not correct.



The web page profile as a negative, with vertical scale stretched for easier comprehension.



The original elevation data plotted as a line graph. Note that it matches the web page profile.



The original elevation data plotted as an x-y graph. This is the correct representation of the course.

I recently prepared a marathon course profile, and faxed it to the race director. He asked for the original data so that their artists could use it to make a profile for their web page. I sent it, 103 distance vs elevation pairs.

Some time later I looked at the web page, and the profile did not look quite right. After some head-scratching I found that whoever used the data I sent made a plotting mistake.

They plotted the data as a line graph instead of an x-y graph.

A line graph works OK only if all the data on the x-axis are evenly spaced. The data are not evenly spaced.

The elevation chart shown on the web page gives the false impression that the hills go on and on until mile 16 is reached. In reality, the major hills are over at 12 miles.

If this is not corrected, a few runners could be scared away by the profile.

It may be worthwhile noting that it's very rare to see a course profile presented by race management in a form that really gives the serious runner the information they need. To do this, the vertical scale must be exaggerated so that the climb on each hill is easy to read. This is rarely done. Instead, the course profile is usually presented as a practically horizontal line, with a few imperceptible undulations, just as the example race did.

I believe the reason for this is that a really useful profile will give some runners an idea that the course is too hilly for them, and they may decide not to run. It's too bad, because the more you know about a course, the better prepared you are to run it.

There are exceptions. Some downhill courses tout the fact that they are downhill, and show the profile with its huge downhills, obviously to attract runners to this feature.

Pete

IAAF/AIMS GRADED MEASURERS IN THE AMERICAS AND SOME OTHER AREAS

Created by Pete Riegel - 24 February 2000

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ARG	B	Rolando	Czerwiak		Roseti 1163 - 7B, CC 13 Sucursal 27, 1427 Buenos Aires		
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BRA	A	Rodolfo	Eichler	helvetia@embraer.com.br, j	Al. Jauaperi, 1083 apto 148 - Moema CEP 04523 - 014 - São Paulo	SP	
BRA	B	Witse Mar	Jurgen Hoornweg van Rij		Rua 28 no. 1144 Conjunto Castelo Branco - Parque10 - Manaus, AM		
BRA	B	Paulo	Silva		Rua Jari 85/302 - Passo da Areia - Porto Alegre, RS		
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ATTENTION ALL MEASURERS

Do you belong on this list? Contact Pete Riegel if you think you do.
If you are already on this list, please contact Pete Riegel with any additions or corrections to your data.

NOTE: Because this file is maintained in a spreadsheet, some data overfills the cells. The file is available from Pete Riegel (riegelpete@aol.com) as a tab-delineated text file which can be opened into most spreadsheet programs. Contact Pete if you want a copy.