PROPOSED ORGANIZATION FOR MEASUREMENT SEMINAR

First Session - 4 Hours
Mutual introduction of participants - general principles of measurement - simple calculation exercises - layout of a calibration course.

Second Session - 4 Hours
Introduction to the Jones Counter - mount counters to bicycles - demonstration of riding by instructor - layout of test course by instructor - measurements by some students - instructor demonstrates the calculations.

Third Session - 4 Hours
Participants measure the test course and do calculations. Instructor helps with calculations when needed. Discussion of things to be covered in last session.

Fourth Session - 4 Hours
This session will cover topics of interest that were raised in the three previous sessions, and will summarize what was taught in the first three sessions.

The above outline is only approximate, since I do not know anything about where I will be teaching nor what is available there.

On the enclosed page are some things the students should study, so that they arrive at the seminar ready to learn. Please see that each student receives a copy well before the seminar. If you can provide a translation, so much the better. If they can master these simple calculations, they will be ready for the course of instruction. I will mail to you enough copies of the IAAF book **The Measurement of Road Race Courses** before the seminar. Each student should receive the book before the seminar. They should study the book **before** they arrive. Let me know how many books will be needed.

Here are things that the organizer must provide:

1) The venue The seminar should have 5 km of traffic-free roads for use by the students. If 5 km is not avaliable, we can do with less. Consult with me on this if you have questions. Near to the seminar should be shelter from the weather, with tables. The students will use the tables for paper work and calculations. I will use the shelter as a place to instruct the students. The students should be prepared to ride bicycles even if it is raining.

2) Two steel tapes of at least 30 metres length.

3) Bicycles for students (and instructor) to use. There should be at least one bicycle for each two students, plus one for the instructor. If you have 16 students, you will need nine bicycles at a minimum. Be sure the front forks can accommodate a Jones Counter. Some mountain bikes have fat front forks. It is difficult to mount a counter on such forks.

4) A Jones Counter for every student. After the seminar they will take their counters home and use them for measuring.

5) Chalk for marking pavement. Several colors would be desirable.

6) **Plenty of paper and pencils** for the students.

7) **A calculator for each student** (have them each bring one).

8) **A hammer and some nails** for making a calibration course.

9) **Paint** for marking the pavement.

10) **A classroom area with a blackboard**. This may be outside - it may be more pleasant than inside - I do not know.

I am hoping we can use a short (5 km is a good size) piece of traffic-free road for the instructional riding. If 5 km is not available, we can do multiple laps within a smaller venue. If you are not sure whether your venue will be suitable, consult with me. Most important is that it be traffic-free. The length is of lesser importance. It need not be measured ahead of time - I can do that as part of the instruction, while the people watch me.

While one group rides, I can instruct the other group. When everybody has recorded their own data, I will go through the calculation of my own data. They can then use it as an example of how to calculate their data.

I intend to be brief in my introductory remarks, and to get everybody on their bikes getting data as soon as possible, after we lay down two calibration courses. After they have ridden and calculated, they will better understand what I will say to them. Of course, a question will be welcome at any time.

If you have any questions, please get in touch. I look forward to working with you again.

STUDY FOR PROSPECTIVE MEASURING STUDENTS

Most important - road course measurement is done using a bicycle with a calibrated front wheel. The bicycle must be skillfully ridden over the proper line, or the data will be without value. **If you do not know how to ride a bicycle, practice until you do.**

The front wheel is calibrated by riding it along a straight piece of road on which an accurate distance has been laid out. Wheel revolutions are counted over the known distance, and these values are used in laying out new courses and checking unknown distances. The device that counts the wheel revolutions is called a Jones Counter. Jones counters record 20to 26 counts for every complete revolution of the wheel.

Study these examples, and become familiar with these calculation procedures:

Example 1

You have laid out a 400 m calibration course. You ride the bicycle over its entire length. The counter reads 37000 at the start and 40681 at the finish.

1) How many counts did you record during the ride of 400 metres?
   Answer: 40681 - 37000 = 3681 counts for 400 metres

2) How many counts will you accumulate if you ride 1 km?
   Answer: 3681 / 400 = 9.2025 counts per metre = 9202.5 counts per kilometre.

3) How many counts in 5 km? **Answer:** 5 x 9202.5 = 46012.5

Example 2

1) Your counter reads 76300. What will it read after you have ridden 5 km?
   Answer: 76300 + 46012 = 122312. However, the counter has only 5 digits. Therefore it will read 22312. It behaves like an automobile odometer that has reached its limit, and begins again at zero.

2) You begin riding at a count of 86530. 15 minutes later you stop at a point to be measured. The counter now reads 12563. How many counts have elapsed?
   Answer: Your counter has "rolled over" and begun again. You must mentally add 100000 to the new counter reading, by adding a "1" before the new reading.
   (1)12563 - 86530 = 26033 counts.

Example 3

You begin a ride at 36100 counts and ride approximately 4 km. When you reach the end of the ride your counter reads 72811.

1) How many counts did you use to complete the ride?
   Answer: 72811 - 36100 = 36711 counts.

2) What distance was covered?
   Answer: 36711 counts / 9202.5 counts per km = 3.9892 km
   or: 36711 counts / 9.2025 counts per metre = 3989.2 metres