

PUSH-BUTTON LISTING FOR THE FUTURE? by Dr David Dallman

On several occasions in past years a mention has been made in NUTS Notes to the effect that the lists for "British Athletics" were going to be produced with the aid of a computer. This has in most cases been followed soon after by another statement that this had not in fact been possible for one reason or another. In this year's book ("BA 1970") however, a start was made in that the records and all-time Top 10 sections were produced directly from a computer print-out. This is only a modest beginning but it has already proved a time-saver since the production of these sections for "BA 1971" has taken only a small fraction of the time required in the past. Furthermore, errors which inevitably arise when all this data is typed at once are virtually eliminated.

I would like to outline what possibilities there are for extending the scope of this work. Some of the awe with which electronic computers were once regarded has possibly been replaced by cynicism following numerous Press reports of instances where crazy results were produced. However, these are almost always a result of some deficiency in the programming system (the so-called "software") which is, of course, designed by a human brain. The level of performance of actual computer machinery (the "hardware") is so high that the chance of an error remaining undetected is essentially zero.

In the scientific field one of the main advantages of using computers is that calculations which might take a man with a calculating machine months or years to do (and for that reason would rarely be attempted) can be carried out in a matter of seconds. Even so, each basic arithmetic operation performed by the computer is very simple, involving only the addition or subtraction of a pair of numbers. At the present time the field of athletics statistics is still largely at the stage of data collection and presentation, especially from periods when little or no attempt was made to assemble information on performances. When this large programme of work has been got under control (which will possibly not be very long) the calculational powers of a modern computer will be invaluable in carrying out statistical analyses of the data that has been collected.

Another feature of computers which is becoming increasingly put to use in the business field is the ability to store a large amount of information in a compact form and to obtain access to any desired piece of this information very rapidly. There are many types of physical medium on which data may be supplied to a computer, e.g. magnetic tape (analogous to a tape-recorder), paper tape (punched with holes), punched cards and magnetic discs. These media are also available for the output of information and in addition there is the possibility of printing on to paper.

The medium which is most suitable for athletics performances is the punched card. In most computers the standard punched card has room for 80 characters which is about the same as the number available on a line of a standard typewriter (a line in the main lists of "BA 1970" has a maximum width of about 85 characters, including blanks, of course). Thus it is natural to make one punched card correspond to one performance, that is, to one line of type. Two big advantages of using punched cards (as opposed to paper tape, for example) are that additional cards can easily be inserted by hand in any position and that mispunched cards can be easily corrected and replaced, since each card is independent of the others. One disadvantage at present is that only capital letters are available. This is likely to be changed in the future as there already exist a few machines which can print lower-case letters as well.

The useful output medium for athletics lists which are to be published is clearly the printed paper output (usually called a listing). In fact, to produce such a listing from punched cards it is not even necessary to use a computer at all but only a card-lister, which is one of the items of peripheral equipment usually found at a computer installation. The card-lister simply provides an 80-character per line print-out of the stack of cards which is supplied to it. The two sections in "BA 1970" were produced in just this way and the whole listing took about three minutes.

For any lists produced in this way it would also be possible to automatically generate an alphabetical index of names and a cross-reference of performances. This would be very useful in the production of "British Athletics" since, once the initial index was established, event compilers would not have to produce index cards as at present but would only have to send in details of new athletes and any other differences from the previous year's index (like changes of club). This is a rather more ambitious project and should first be tried as a pilot scheme for a few selected events to iron out any difficulties.

The most fruitful area in which these methods can be applied is that of all-time lists. Many of the marks in such lists remain from year to year and it would be quite a simple job to update by inserting new performances as they are achieved. The lists would then be immediately available any time it was desired to publish them. At more frequent intervals they could perhaps be distributed in the computer print-out form to NUTS members and any other interested parties. It is intended to punch deep all-time world and British lists in all events (men and women) on cards as the first step in implementing this programme of work. This has already been started and news of progress will appear in future issues.

CONTINUED FROM -

THINKPIECE by Keith Morbey and Len Gebbett

The following was omitted from the previous issue for space and other reasons; it has, however, been agreed to publish the article in toto. Ed.

Incidentally, when was the decision taken? The minutes of the EC meetings give no clue. Indeed, on 2 October 1969 "it was considered that top performances without known wind should be annotated in some way, but that OTHERWISE "IRREGULAR" MARKS SHOULD BE SHOWN AS FOOTNOTES." (Our caps) In view of these differing views let us hold a referendum to find out what our members really want.

Whichever way this controversy goes, surely we must never again rank athletes on windy marks, e.g. in the 100m Kilpatrick and Carson were counted in the Top 20 although they had no legal time within our standard during the whole year.

Again, why discriminate against athletes in events uninfluenced by wind assistance? As examples, why was Kenneth Winter not placed 22nd in the PV on the strength of his indoor mark? Or supposing John Watts had thrown 57.80 from a circle fractionally too large: would he have then placed 1st in the DT list?

To conclude, let us concede that any list compiled by an individual statistician is subject to the eccentricities of that individual. To prove the truth of that statement one only has to consider this year's Top 20 lists where the field events have been listed in metric only, Imperial only and metric/Imperial! British Athletics 1970 however, is a full and final record of the year and it should require more than just a seemingly small group to alter its format in such a drastic fashion.

ANALYSIS OF BRITISH 400 METRES PERFORMANCES

by Peter Matthews

To the end of 1970

Under:

Name	Best	46.5	47.0	47.5	Average best 10
Robbie Brightwell	45.6	20	39	53	45.91 1
Adrian Metcalfe	45.7	7	16	32	46.24 2
Colin Campbell	45.8	4	14	30+1b	46.51 3
Martin Winbolt-Lewis	45.9	2	12	30	46.57 4
Tim Graham	46.0	2	11	26	46.60 5 (46.58)
John Wrighton	46.3		11	36	46.67 6
Barry Jackson	46.5		5	17	46.91 7
John Salisbury	46.5		5	15	46.98 10
Ted Sampson	46.5		1	5	47.50 23
David Jenkins	46.5		1	5	
Malcolm Yardley	46.6		1	19	46.95 8
John Robertson	46.6		1	11	46.96 9
Martin Bilham	46.6		1	5	47.35 17=
Howard Davies	46.7		1	9	47.21 11=
Godfrey Brown	46.7		1	8	47.28 13=
Mike Rusek	46.7		1	6	47.30 15
John Sherwood	46.8		1	6	47.28 13=
Gwynne Griffiths	46.8		1	6	47.33 16
Ken Wilcock	46.8		1	3	47.44 22
Bill Roberts	46.8		1	1	47.69 27=
Peter Warden	46.9		1	1	47.35 17=
Len Walters	46.9		1	1	47.39 20=
John Adey	47.0		1	1	47.21 11=
Mike Fitzgerald	47.0		1	1	47.39 20=
Ralph Banthorpe	47.0		1	1	47.59 24
John Helms	47.0		1	1	
Peter Beavan	47.0		1	1	
Peter Higgins	47.1		1	1	47.35 17=
John Wilson	47.1		1	1	47.76 31=

Others with no. of performances under 47.5:
 47.2: Jim Aukett 47.69-27=; Paul Charles 47.78; John D. Cooper 1;
 Norman Putter 1; Ricky Taylor 1. 47.3: Derek Pugh 1 47.91; Alan
 Pennington; Mike Rawson 1; Derek Price 1. 47.4: Michael Wheeler 4
 47.60-25; Derek Johnson 1 47.68-26; Richard Green 1 47.70-29=;
 Bob Scott 1 47.85; Chris Lindsay 1; Peter Fryer 1 47.98;
 Pat Jones 47.5 47.70-29=. Nick Overhead 47.5 47.76-31=.

800 METRES

To the end of 1970

Name	Best	1:47.5	1:48.5	1:49.5	Average best 10
Chris Carter	1:46.3	9	26	43	1:47.00 2
John Boulter	1:46.5	10	35	61	1:46.96 1
Derek Johnson	1:46.6	3	9	22	1:47.72 3=
John Davies	1:46.7	3	6	12	1:47.10 4
Andrew Carter	1:46.8	2	3	9	1:48.54 11
Bob Adams	1:46.8	1	2	10	1:48.80 14
Brian Rawson	1:47.0	2	12	26	1:47.72 3=
David Cropper	1:46.9	3	7	18	1:47.86 3=
Mike Rawson	1:47.0	1	4	15	1:48.21 7
Phil Lewis	1:47.1	2	2	4	1:49.06 12=
Colin Campbell	1:47.2	2	4	11	1:48.91 10
Bill Cornell	1:47.4	1	2	3	1:49.44 23
Robbie Brightwell	1:47.4	1	1	1	
Martin Winbolt-Lewis	1:47.5	1	3	10	1:48.77 13
Jim Paterson	1:47.5	1	1	1	
Mike Varah	1:47.5	1	3	13	1:48.37 9
Mike Maclean	1:47.7	1	1	2	1:49.53 24
Tony Harris	1:47.8	1	6	15	1:48.33 8
Peter Kilford	1:47.9	1	2	10	1:48.81 15
Duncan Middleton	1:47.9	1	1	2	

500 METRES (Cont.)

<u>Name</u>	<u>Heat</u>	<u>Under: 1:48.5</u>	<u>1:49.5</u>	<u>Average heat 10</u>
James Baker	1:47.9	I	I	
David Wilcox	1:47.9	I	I	
Tom Farrell	1:48.0	2	5	
Peter Browne	1:48.1	3	10	1:48.69 12
John Greatrex	1:48.1	I	2	1:49.98 30
Mike Fleet	1:48.2	I	12	1:49.02 16
Bob Piorcy	1:48.2	2	5	1:49.59 26
Graham Grant	1:48.2	I	3	1:49.94 29
Treves Schofield	1:48.3	I	I	1:50.03 31
Frank Martin	1:48.4	I	5	1:49.30 20
Malcolm Rothwell	1:48.4	I	5	1:49.43 22
Mike Wiggs	1:48.4	I	I	
Walter Wilkinson	1:48.4	I	I	
Mike Farrell	1:48.5		3	
Alan Dean	1:48.5		6	1:49.58 25
Sydney Wooderson	1:48.5	I	6	1:49.10 19
Bill McKim	1:48.5		I	
Kerina Lloyd	1:48.5		2	
David Ross	1:48.5		I	
John Wark	1:48.6		I	
James Johnson	1:48.7		10	1:49.06 17
Andrew Green	1:48.8		I	1:50.58
Al Purkis	1:48.8		6	1:49.31 21
Stan Taylor	1:48.8		4	1:49.60 27
Alan Simpson	1:48.8		I	1:50.21

Others with No. of performances under 1:49.5:
 1:48.9: John Gordon 2 1:50.33: David Cocks 1; 1:49.0: David W. Wright
 3 1:49.55-20; John Williams 2 1:50.10-32; Ron Fittin 1 1:50.11-33;
 Len Walters 2; Ross Moughtin 2; 1:49.1: Ted Bagwell 1 1:50.40;
 Colin Shillington 1. 1:49.2: John Holt 2 1:50.33; Derek Smith 1.
 1:49.3: Craig Douglas 2; David Johnson 2. 1:49.4: John Whetton 1 -
 1:50.19-34; Neil Ruggan 2; Peter Penham 1 1:50.45; Hugh Pullan 1;
 David Kiffin 1; Bob Satti 1.

1000 METRES FIRST PERFORMANCES End 1970

John Boulton	2:18.2, 2:18.8, 2:19.6, 2:21.4, 2:21.4
Walter Wilkinson	2:18.8, 2:21.4, 2:20.8
Brian Howson	2:19.2, 2:19.3, 2:19.7, 2:19.9, 2:20.2, 2:20.2, 2:20.1
Andrew Carter	2:20.6, 2:21.5, 2:21.9, 2:23.6
John Whetton	2:19.4, 2:22.3
Derek Johnson	2:19.7, 2:20.4, 2:21.7, 2:22.3
Frank Martin	2:20.4, 2:23.0, 2:23.6
Chris Carter	2:20.4, 2:21.2
Andrew Green	2:20.4
Alan Gordon	2:20.9, 2:21.6, 2:22.8
Mike Varab	2:21.1, 2:23.4, 2:23.5
Malcolm Rothwell	2:21.2, 2:22.5
Jim Douglas	2:21.4
Alan Dean	2:21.4
Alan Gordon	2:22.0
John Davies	2:22.1
Colin Shillington	2:22.21, 2:22.71
David Prior	2:22.5
Alan Simpson	2:22.5
David Cropper	2:22.7
	2:22.8

The segregation of "windy" from "legal" performances in ranking lists for sprints and horizontal jumps has long been accepted statistical practice, and the decision of the N.U.T.S. Executive Committee to institute the new format was therefore not taken as lightly as was suggested by Keith Morbey and Len Gebbett in the criticism printed in the last edition. A considerable number of innovations in methods of presenting data have been introduced in our Annual over the years, but these are surely the product of constant probing for improvements, and evidence that the work we do can never be looked upon as purely thoughtless and repetitive compilation. Every decision taken on both major and minor changes of policy has been thoroughly debated in Committee, but it would be illusory to suggest that all alterations have been universally welcomed. Nobody on Committee is so radical as to relish change for its own sake; indeed, I would submit that the predominant feeling is "traditionalist". For the record, the proposal for change to the current listing format was passed at the Executive Committee meeting of 2.10.69, when Keith was present; it may be that his disenchantment with the concept has increased in the ensuing months, but I certainly do not recall his suggesting an appeal for a general referendum on that occasion.

In defending the new layout, I must initially confess that it is obviously far from perfect, only that it is an improvement on a system creaking with inconsistencies. Before dealing with these, let us examine the specific points raised by Keith and Len:

1. Comparison of like with like; how naïve can you get? There have always been important areas of disagreement between the standards prescribed by the N.U.T.S. and those of overseas statisticians (notably, our insistence on the use of photo-electric timing adjustments), and I do not accept that we should have to alter our criteria in order to make our lists comparable with those compiled according to standards which we do not consider right. There are so many factors affecting performance that I consider it a futile occupation to make profound comparisons on the basis of ranking lists; this is, of course, one reason why the term "ranking" should be used carefully and why our lists do not necessarily imply any order of merit.
2. Consultation with the A.T.F.S.? A lengthy and difficult procedure which I feel can best be tackled by putting the idea into practice. It is worth noting that most publications by foreign statisticians are individualistic in presentation; many I have consulted show remarkably similar thinking (independently!) on various aspects of layout, including our method for listing subsidiary performances - and the incorporation of "windy" marks. Incidentally, my annual report on the U.K. for "Leichtathletik" was submitted in the new format and was published with neither comment nor revision.
3. "Injustice" is a purely subjective term, particularly so in this context, and will depend entirely on one's personal prejudices.
4. No matter what information and assistance the N.U.T.S. provide, there is always the tendency for selectors to dwell on the top of the list; but surely no selector will rely solely on the order of listing? The lists can be used to indicate likely candidates for selection, but rarely to dictate choice.
5. Despite claims to the contrary, a "windy" performance is soon forgotten for most statistical purposes, particularly outside Britain - e.g. show me the World Top-10 which records Hayes's 9.9 or Boston's 8.49. Such omissions are caused not so much by the knowledge that the performances were unattainable, but by a completely thoughtless automatic rejection. Personally, I have far more respect for that 9.9 than for any of the 9.1's which have been accepted as valid.
6. Why 2.0 m/s.? Logically, anything above 0.0 m/s is wind-assisted! It is a nice philosophical point whether an arbitrary limit for wind-assistance is necessary for deciding on record performances, or whether all "natural" phenomena should be accepted without question; if so, would it be logical to limit the realm of "natural phenomena" to meteorological influences, or should flexibility extend to the complete environment? I personally feel that where it is possible to control the environment consistently (e.g. ground level, track-size and shape, specification of implements, etc.), and where it can be reliably established that variations from the norm are unduly beneficial, we can justifiably promulgate limits for record conditions; in other circumstances it is not really logical. I realise, however, that the evaluation of a performance rests on subjective judgement rather than logic, and the establishment of record criteria will therefore depend on certain arbitrary conditions being met. Such standards, however, should be based on the elimination of extra-ordinary circumstances rather than attempts to attain the fool's paradise of complete uniformity. The imposition of the 2 m/s limit for wind-assistance is misconceived for this very reason; it is assumed (I repeat, assumed) that wind-speeds in excess of this figure give an unfair advantage, but unfair in comparison to what? It would be a satisfactory standard only if it could be clearly demonstrated that

stronger winds were an unusual occurrence - but we know well enough that this is not so. It would be far more appropriate to attempt to obtain an empirical distribution of all wind-speeds likely to affect sprinting/jumping; such a distribution would have calculable statistical parameters which could be used to determine a cut-off point beyond which it would be reasonable to reject a record claim on the grounds of "unfair assistance". This concept is based on normal statistical methods and is technically feasible, although obviously there would be such immense practical difficulties in organising the collection of data that it is impossible to envisage its full implementation. On the other hand, there must be a sufficient number of readings available for us to make a healthy estimate of a true distribution, and if anyone had the time to analyse this material, I am sure the results would be of general interest.

7. Downhill tracks come into the realm of controllable environment, and besides they are a sufficient rarity to warrant separate treatment.

8. The admission by Keith and Len that we have to give the benefit of the doubt to performances set under unknown conditions highlights one of the glaring faults of the segregation system. We have always talked so readily of "legal" and "windy" performances, but what has become generally accepted is that "windy" = "illegal" or "invalid"; there is no such damning implication surrounding the unknown conditions, and unfortunately we tend to forget about the lack of evidence just as quickly as we forget about the existence of the "windy" mark. In view of the alleged assistance derived from a following wind, is it not surprising that only a small proportion of athletes have faster "windy" than "legal" marks? The probable answer is that a large number of the performances accepted as valid were in fact "illegally" assisted, and if one wanted a truly consistent segregated system, all marks for which wind information was not available should be listed separately; our Top-100's would then be trichotomised into "legal" (say 25%), "unknown" (50%) and "windy" (25%) sections - and a load of meaningless rubbish it would be. In their opening paragraph, Keith and Len bemoaned the lack of comparability between British and foreign lists, but how can one justify comparisons based on such suppositional elements?

9. "NUTS NOTES" is always available for the dissemination of opinion, either for or against Committee decisions. The fact that few voices have been raised against our new system suggests that most members are satisfied with the Committee's judgement and accept that major alterations are not made without due consideration. However, it would be advantageous if the reasons for such decisions were expounded in detail, and I certainly regret that other pressures (which have forced me to suspend my annual editorial contributions) prevented me from undertaking this duty a year ago.

Here then are my reasons for preferring to dispense with the segregation of "windy" from "legal" performances in ranking lists.

- i) There are other factors involved;
- ii) Events not segregated may in fact be influenced;
- iii) There is no clear evidence of the benefits derived;
- iv) Readings are notoriously unreliable;
- v) Readings are too infrequently obtained.

1. A great many factors influence performance in athletics, but little regard is paid to most of them; these factors can be divided into two broad categories -

The human element :

- (a) Physical ability;
- (b) Mental condition;
- (c) Quality of competition;
- (d) Timekeeping and judging.

The environment :

- (a) Track composition (i.e. size, shape and running surface);
- (b) Track "ambience" (accessability, facilities, etc.);
- (c) Wind-conditions;
- (d) Rain;
- (e) Temperature;
- (f) Atmospheric pressure;
- (g) Humidity;
- (h) Time of day;
- (i) Light.

I do not claim that this list is exhaustive, nor do I postulate any particular order of importance (although clearly the major factor is the basic ability of the athlete), and there must be a considerable degree of inter-dependence. Can anyone justifiably dispute the relevance of any of the factors? Can anyone honestly evaluate their effects? I think not.

11. the meteorological influences quoted above can be measured, but only the effect of wind is considered relevant in athletics. I am convinced this is illogical and unfair. Of course, I am not suggesting that a following wind is not directly beneficial to sprinting, jumping and, within limits, hurdling, but so must warm temperatures or low atmospheric pressure, etc. Because the latter do not exert any overt influence, no statistician has bothered to take them into account, except on rare occasions. One such was the 1968 Olympic Games, held in Mexico City's rarified atmosphere; Dr. Don Potts then equated the barometric level to wind-assistance of 2 m/s, but has this affected the compilation of ranking lists? Not one iota! Strict adherence to the rules has been implemented with awesome automatism, as a glance at the World Top-10 for the triple jump will show through the rejection of Walker (17.12/+2.5) and Dudkin (17.09/+3.0).

2. Tradition rules much of our work as compilers, and tradition decrees that only the sprints, horizontal jumps and high hurdles are favourably influenced by wind-conditions. Even with these obvious events there are areas of doubt - few hurdlers can benefit from very strong following winds, indeed some may actually gain more from a slight head-wind; my dissertation on the effective wind-component in bend 200m races has received general approbation, even from abroad, but there is little evidence that it has caused any changes in actual compilations.

But what about other events? Every discus thrower knows about the advantages of certain wind-conditions, even if many are not skilled enough to benefit; there is, in fact, a strange corollary to this, since the skilled thrower can expect to gain considerably more from favourable conditions than the lesser performer, whereas in the sprints and jumps one assumes that any benefit would be uniform for all competitors. There was a time when a following wind in the javelin was considered an "unfair advantage", but the advent of the aerodynamic model has reversed this situation. Despite such generally accepted advantages, one does not expect to find discus and javelin lists split into "legal" and "wind-assisted" sections. What about the pole vault; is speed on the runway augmented by a following wind? Is a strong wind necessarily detrimental to other track events? One straight may receive the full benefit while the other may be sheltered by the stands (as sometimes occurs at Crystal Palace), and enclosed stadia often produce vortical phenomena, such as at Cardiff in 1958. How about marathon races on one-way courses, like Windsor-Chiswick or Inverness-Forres? There is neither discrimination nor annotation in any of these cases, and yet there are so many unknowns; to single out only one group of events for special attention is therefore surely illogical.

3. Does wind-assistance assist and if so, by how much? As I mentioned above, wind is but one of a number of factors influencing performance, and it is almost impossible to determine the advantage gained by a given rate of wind-assistance in isolation from the other factors. Even if all other conditions were equal, there would still be no evidence to prove that a wind-speed of x m/s provides an improvement of y tenths of a second or z centimetres. Presumably somebody skilled in aerodynamics and anemology could calculate theoretical values and it might be rather splendid to convert all performances to a uniform level of assistance (always assuming all wind-data were available), although in fairness we would then have to obtain conversion factors for all other sources of variation. Perhaps in time we could devise a comprehensive formula involving all these variables, then we would just need a computer and we could pour out vast quantities of gibberish.

Unfortunately, theory and practice frequently produce diametrically opposed results. We all know that excessive following wind is an advantage, but it is extremely difficult to find any reliable evidence to back up such undeniable logic. Consider the current British best-ever performances :-

		Best "legal"	Best "windy"
<u>Men</u>	100m	10.2	10.2
	200m	20.4	20.6
	110mH	13.6	13.6
	200mH	23.0	23.7
	LJ	8.23	8.12
	TJ	16.46	16.65
<u>Women</u>	100m	11.3	11.3
	200m	23.2	23.1
	80mH	10.6	10.7
	100mH	13.4	13.7
	200mH	27.3	27.1
	LJ	6.76	6.70

Hence, 3 out of the 12 events show superior "windy" marks, which is hardly the most compelling evidence. However, no statistician would be satisfied with conclusions drawn from such scanty data, so let us examine an event in depth, the 100m. The following is

the distribution of all British performances to date down to 10.5 (including equivalent 100y times, but excluding McDonald Bailey, for whom I do not have complete data to hand):-

	"Legal"	"Windy"
9.3/10.2	2	3
9.4/10.3	18	16
9.5/10.4	60	51
9.6/10.5	163	117
	243	187

Again, scarcely the most dramatic evidence that following winds are significantly helpful, although I must admit that the two sets of data do not necessarily derive from equivalent base populations - i.e. there may be more races held under "legal" conditions than "windy", but I have no evidence either way (and Edinburgh 1970 must have helped to redress any previous imbalance if one existed!). Alternatively, many of the performances counted as "legal" may have been given the benefit of the doubt - who knows?

This argument can be extended by studying long and triple jump series. My own observations (which I cannot present here in depth, otherwise this article might not be ready for another year) again fail to show any strong evidence either way. One would certainly expect that if most other conditions were equal, such as might occur within any one normal competition, wind would be a significant factor in producing better marks, but one finds time and again that there is no regular pattern within any series - which seems to indicate that the important elements in the composition of a good jump are not entirely governed by the strength of following wind.

No matter what evidence one can unearth about the benefits of following winds, it is still an incontrovertible fact that nobody can prove that an athlete who has run a "windy" 10.2 would not on that occasion have run 10.2 in "legal" conditions - or conversely that a wind-free 10.2 would have been faster with a significant tail-wind. It remains a matter of conjecture, and I question whether it is right to dismiss performances as we have all been happily doing for so many years on such unproven grounds. It surprises me that a jumper is even allowed to claim a wind-assisted mark in his series towards the final result of the competition, if people really feel there is an unfair advantage to be gained. This reminds me of that ludicrous situation in the Russia-E.Germany match in 1961, when Hildrun Claus was credited with a World record of 6.42 (+1.4), yet placed only third in the competition behind Shchelkanova (6.50/+3.2) and Shaprunova (6.46/+5.4)! Just to ram the point home, Claus had four "windy" jumps in her series, so one cannot say she did not have the same opportunities as her opponents.

4. One of the worst aspects of this whole business is that we do not have adequate facilities for measuring wind-speed accurately enough. Even if the gauge is performing properly (and there are many in use which are demonstrably faulty, such as the one used at Colwyn Bay in 1969 when Halliday and Walters were credited with "legal" 10.3's), its method of operation is subject to errors which may be significant in readings close to the statutory limit, but more important it cannot record anything except the situation in its immediate vicinity. In a race, the lane furthest from the gauge may have very different wind conditions from that nearest, especially in enclosed stadia. I was wind-observer at Crystal Palace during Heide Rosendahl's 5129 pentathlon, and I clearly remember her coach's insistence that the gauge be shifted from the inner edge of the track to the more sheltered side under the stand's overhang. I was able to oblige with a 1.35 m/s reading (need I add that Heide ran in the lane furthest away?), and everybody was satisfied with the legality of the situation, but I did wonder what the position might have been had I remained in the more exposed spot.

The second point is that wind usually comes in gusts of varying intensity rather than blowing consistently at a constant rate. The gauge will be placed at approximately the mid-point of the course, so that for much of the race, the conditions actually affecting the runners will be difficult to estimate. Gusts as high as 10 m/s (roughly sprinting speed) will have a dramatic effect on the gauge but may never be of use to the athlete. It is easy to illustrate this by means of hypothetical examples and actual occurrences in my own experience, but there is no need to dwell on the matter. However, it is worth mentioning the freak conditions occasionally encountered at the White City long/triple jump area, where the wind has been known to blow from both ends of the runway at once! Depending on where you place the gauge, you could get following or adverse readings for the same jump; no wonder it was such an unpopular venue for competitors.

Thirdly, there is the problem of oblique winds. The Cantabrian-type gauge is constructed to obviate the need for calculating wind-direction by recording only the component in the direction of running, but is it really accurate (even assuming it has been correctly aligned by the operator, who has to judge this by eye)? How accurate in recording direction as well as speed are the traditional cup-type anemometers still widely used throughout the world? Wind-direction is as changeable as speed, so one wonders whether

it is ever possible to make an accurate component calculation with this type of guage. Most important, can we be certain that a wind-component (e.g. 3.5 m/s for a 5 m/s wind blowing at an angle of 45°), even if accurately measured, produces exactly the same effect as an actual wind (3.5 m/s) blowing directly along the straight?

5. There is no need for me to emphasize the problem of lack of data. Everybody knows this complication exists, and the fact that it may be confined mainly to the lower reaches of the lists does not make the situation any less unsatisfactory; even in 1970 the status of some of the best performances has had to be decided by guesswork. We tend to label suspicious performances instinctively as "windy", thereby increasing the prejudice against other genuine but wind-assisted marks, whereas we would do much better by being honest and making use of the "doubtful authenticity" category more often.

In conclusion, let me summarise my ideas :

- (a) Wind-assistance is one of many factors influencing all events in athletics;
- (b) Its benefits are difficult to assess accurately or isolate from other factors;
- (c) Most athletes compete under a wide range of conditions during a season, some average, some beneficial, some detrimental;
- (d) Unfairness must be related to the unusual rather than the commonplace;
- (e) The data on which we can make assessments is very incomplete;
- (f) If a criterion for record purposes is considered essential (which I think is a reasonable tenet) it should not be restricted to just one of the many factors, nor should it be based on a sort of "null" state but rather on abnormal, rarely encountered circumstances. There is, incidentally, no reason why record criteria should be extended to ranking lists - precious few of the performances we consider listable would survive such strict requirements.

Note : although most other members of the Executive Committee share my views (and I would particularly like to acknowledge David Dallman's advice and assistance), the opinions expressed in this article are entirely my own.

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CURRENT BIOGRAPHY

This is the title of an annual reference work which you may be able to consult at your reference library. Athletes included in recent years:

1941	Joe Greg Rice	1961	Rafer L Johnson
1946	Marcel F Hansenne		Wilma G Rudolph
	T Les MacMitchell	1962	Peter G Snell
1947	Rev Gil L Dodds	1963	Jim T Beatty
	Mildred E Didrickson		Valyériy N Brumyel
1948	Avery Brundage		John T Pennel
1949	Mel E Patton	1965	Fred M Hansen
1950	Jim Thorpe	1966	Bob L Hayes
1952	Don A Gehrman	1967	Michel Jazy
	Bob B Mathias		Kip Keino
	Fred L Wilt	1968	J Randy Matson
1953	Emil Zátopek		Jim R Ryun
1956	Dr Roger G Bannister	1969	O J Simpson
	David G B Cecil		
	Jesse (J C) Owens		
1957	Rev Bob E Richards		
1960	Herb J Elliott		
	John C Thomas		

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