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The "Mars Effect" As Seen by the Committee PARA

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Abstract — This paper deals primarily with the research carried out by the Committee PARA (the Belgian Committee for the Scientific Investigation of Claims of Paranormal phenomenon)[1] on a problem proposed by Michel Gauquelin in 1960, effectively undertaken in 1967, and of which conclusions have been published in 1976 in the Committee's Bulletin: Nouvelles Bréves (N.B., No. 43, September, 1976). It also contains some comments on newer research, including those by other authors. The problem concerns correlations that Gauquelin claims to exist between sports champions and the positions of the planet Mars in the sky at the time of their births. The Committee PARA has rejected the belief in any Mars effect in the case of sports champions. It is the position of the Committee PARA that, while some of Gauquelin's astronomical and statistical computations appeared perfectly correct, the theoretical principles proposed by Gauquelin to support his research have to be rejected because they do not correctly take into account the fundamentals of the problem — the secular and diurnal socio-demographic factors. The objective of this article is to correct the many mistakes, misinterpretations, and false inferences which have been made regarding the research of the Committee PARA.

Keywords: Mars Effect — astrology — paranormal

Introduction

Michel Gauquelin has claimed that correlations exist between sports champions and the position of the planet Mars at the time of their births. The Committee's research contains two parts. The first part concerns the establishment of specific statistical material and its analysis following the principles proposed by Gauquelin in order to verify — at his request — his astronomical and statistical computations. These computations as made by Gauquelin appeared perfectly correct.

A second part of the research consists of the establishment of a model for the theoretical mechanism of the purported phenomenon. From this analysis, it clearly appears that the theoretical principles proposed by Gauquelin to support his research have to be rejected because they do not correctly take into ac-

[1] Comité Belge pour l'Investigation Scientifique des Phénomènes réputés paranormaux (Belgian Committee for the scientific investigation of claims of paranormal phenomenon). In short: Committee PARA (Dommanget, 1993).

count the fundamentals of the problem — the secular and diurnal socio-demographic factors.

As a consequence, the Committee has rejected the validity of any Mars effect in the case of sports champions. There is no reason for not extending this conclusion to any other planetary effect on human beings.

Since then, many other tentative solutions for solving the problem have been realized, but unfortunately, without reaching a common agreement. This is not surprising because whatever one may try to find in favor or in disfavor of the reality of the Mars effect, the fundamental question consists of establishing the theoretical reference diagram to which the one observed should be compared, and that has not been properly considered. Unfortunately, this seems impossible as long as no one knows how to handle the socio-demographic factors.

Some complementary, unpublished results obtained by the Committee PARA are also given. They were ready for publication in 1977–1978, but it was impossible to come to an agreement with Gauquelin on our proposed model of the phenomenon. This impasse required us to wait.[2] The inability to come to an agreement concerning a model became a stumbling-block to any discussion. Unfortunately, this model has also been ignored by all those who studied the problem during the last twenty years.

Background

Forty years ago, Gauquelin started researching the planetary influences on human beings. But it wasn't until 1960 that he proposed to our committee to *verify his computations*. For a variety of reasons, the real start of a collaboration between Gauquelin and PARA did not take place until 1967. As far as I know, this was the first time that the work of Gauquelin was checked on a serious, scientific basis. The most significant experiment to consider, according to Gauquelin, was the Mars/sports champion theory one.

This experiment consists of establishing a sample set of sports champions and dividing the daily motion of Mars into twelve classes: six equal intervals (diurnal) between rise and set, and six others (nocturnal) between set and rise for each birth-date of the sample. The problem hinges on the normal or abnormal shape of the corresponding histogram. In the opinion of Gauquelin, the classes 1 (just after rise) and 4 (just after meridian transit) should be considered a priority.

The results of this check (Figure 1) were published in 1976 after long discussions, various computations, and tests. The conclusion was that Gauquelin's *numerical* computations were correct, but some criticisms had to be made about his conception of the statistical mechanisms. We must keep in mind that the solution of such a problem necessarily includes two parts: first,

[2] **Much later, in one of his last papers, Gauquelin (1988) pursued his idea and considered that his analysis was the only right one.**

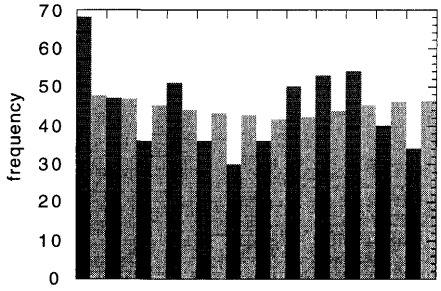

Fig. 1. Diagram of the observed frequencies (dark drawing) and the theoretical frequencies (clear drawing) of the sport-champions in the twelve classes of Mars.

the establishment of a sample, which may be subject to complications and uncertainties, and second, the computation of the theoretical frequencies that the sample should confirm if chance alone is responsible.

After having conducted some tests, the sample was considered as sufficiently correct, but the computation of the theoretical distribution of the sports champions in classes seemed to the Committee to need further investigations. These investigations based on a statistical model specifically established by the Committee for the present problem, showed that the formulae adopted by Gauquelin were not correct.

Therefore, the committee considered that it could *not* accept Gauquelin's conclusions *as long as they were based on the methods and formulae that he proposed (N.B.,* No. 43, p. 343, lines: 15-17).

Gauquelin did not agree with our theoretical research, and a long "discussion" started — traces of which may be found in the papers published afterwards by both sides. Considering that our demonstration of the statistical mechanism was not understood, and considering that this understanding was fundamentally needed to authorize any further discussion, the Committee decided to stop any further comments and reactions.

Since then, similar misunderstandings have unfortunately occurred with nearly all the other authors who started studying this question. Except for authors Kurtz, Zelen and Abell (1979) — who gave a correct (but unfortunately much too short) report on our research —most of them were not sufficiently patient enough to study our paper, and preferred to repeat what was written by Gauquelin.

We clearly stated our position in *The Humanist* (1976b) and *The Zetetic Scholar* (1982). Current reports from other sources differ greatly from our position. The existence of our paper is mentioned in general, but its conclusions have never been clearly detailed or correctly reproduced. Furthermore, our model of the statistical mechanisms leading to the class distribution — the most important part of our research — is simply ignored.

In a letter, written April 19, 1982, to M. Truzzi, Editor of *The Zetetic Scholar*, I suggested that perhaps our paper was not understood because it was writ-

ten in French. My hope was that the Editor would then propose a solution for publishing a translation of our paper. But I was not successful in my efforts to achieve clarification.

It is surprising to note that even the analysis of Gauquelin — as far as I know — has never been reported and detailed in any such papers in which he (at least) was conscious of the necessity of computing a theoretical reference diagram.

Therefore, when Brenda Dunne, Vice-President of the Society for Scientific Exploration, and L. W. Fredrick, Secretary of the Society, gave me the opportunity to speak about the position of the Committee PARA as described twenty years ago — an opportunity to recount the details accurately — in the field of the Mars influences investigated by Gauquelin on the athletic proficiency of individuals, I was delighted. This article is a recounting of that presentation at the Third European SSE Meeting in Freiburg, Germany. It was my hope then, as it is now, that the Committee PARA's position will finally be understood, and its fundamental idea correctly described for the future reference.

Therefore, this article is not really a new contribution to the research made by the Committee PARA. It is a statement ***needed*** because of too many inconsistent papers and comments written about the Committee's research. It is a definitive answer to the erroneous assertions published in various reviews and magazines.

Rough Historical Sketch

The Mars effect has been announced and discussed by Gauquelin successively in: ***L'Influence des Astres*** *(1*955), ***Mkthodes pour Étudier la rkpartition des Astres*** *dans* ***le Mouvement Diurne*** (1957) and ***Les Hommes et les Astres*** (1960). These are the basic references used by the Committee PARA during its research.

At that time, a first contact was established by Gauquelin with some representatives (mainly A. Bessemans and S. Arend) of the Committee PARA known then as the only existing Skeptics Committee (Dommanget, 1993), but did not lead (as recounted only) to any successful "collaboration".

The first positive meeting occurred in 1967 when a firm agreement was adopted to conduct an examination by the Committee PARA of the research carried out by Gauquelin. It was then decided to establish a new sample of sports champions, and to perform all the computations on both sides in order to verify Gauquelin's proposed phenomenon and theory, step by step.

This phenomenon hinged upon the histogram obtained by Gauquelin for the position of the planet Mars for the birth times of any sample of sports champions.

The sample consisted of: 430 French sportsmen objectively chosen in the ***Dictionnaire des Sports*** by E. Seidler and R. Pariente (1963), 43 French soccer players, and 62 Belgian international soccer players chosen as the most promi-

nent sportsmen of their time. Thus, the sample totaled 535 sports champions whose birthdates are spread over the period 1872–1945.

The year 1968 was devoted to the search of all needed data: precise birthdates and hours (by collecting official documents, geographic positions of the birthplaces), reduction of all birth-hours to Universal Time by considering the corrections to be made to the official times as a function of the birthplaces (Ex.: Alsace-Lorraine during the first World-War). This was done by a common effort by Gauquelin, the Committee PARA, and Luc de Marre.

In agreement with Gauquelin, the aims of the Committee have been defined as follows: (1) astronomical aspect — to verify Gauquelin's computations of the astronomical positions of Mars and the sport-champions' affiliations to the different sectors or classes as defined by the author, thus to verify the observed histogram; (2) statistical aspects — to verify the computations that construct the theoretical histogram *following* the rules proposed by M. Gauquelin and also the computation of the χ^2 test. The results of these checks have been published in N.B, No. 43, (1976).

The PARA conclusions were: (1) astronomical aspect — the computations made independently on both sides are in perfect agreement. The observed distribution histogram was thus clearly confirmed and accepted by PARA (ibidem, IX, Conclusion: items a and b, pp. 342–343); (2) statistical aspects — the computation of the theoretical histogram following the rules proposed by Gauquelin as well as that of the χ^2 test did not seem to contain any error (ibidem, item c, p. 343).

But, concerning the method used by Gauquelin to compute the theoretical histogram, the Committee has expressed serious criticism because of the following considerations:

- This method does not take into account the theoretical probability of the occurrence of the configurations C_k (see: explanation below).
- It does not allow to correctly take into consideration the possible evolution of the nycthemeral curve with time.
- It makes use of the sample itself, which is generally not allowed because it has an influence on the degrees of freedom.

To summarize, it is clearly stated in N.B., No. 43 that the Committee: agrees with Gauquelin's computations as long as his method is used, but disagrees with his method for computing the theoretical histogram.

This position has been recounted on many occasions (see for instance: The Humanist, 1976b and: The Zetetic Scholar, 1982) as well as the very recent paper given at the Oostende Meeting (September 1994) organized by Skepp, another Belgian group of Skeptics. Unfortunately, no proceedings of this meeting have been published.

Many authors did not understand (or did not want to understand!) this position, and considered that the Committee "has replicated the results found by

Gauquelin" — leading to the impression that it thus agreed with the existence of a Mars Effect.

Here are some examples:

1) In Skepter, Nanninga (1993), mentioning skeptics who tried to reject the Mars Effect, writes: "The Belgian skeptics, who conducted their research together with Gauquelin, did not succeed. They also found an always unexplained Mars Effect".

This is incorrect because:

- The Committee's research had not been conducted with Gauquelin, who only helped in establishing the statistical sample of sports champions. I suppose that no one would consider that "Kepler conducted his research" on the three laws of the celestial mechanics "together with Tycho-Brahe" because he used the observations of the latter.
- The Committee never found a Mars Effect, but found the same histogram as Gauquelin which — as we have shown — does not prove anything.
- The Committee has proposed a model for the statistical analysis, to which Gauquelin did not agree. This is not mentioned by Nanninga.

  An answer to Nanninga was published in the next issue of the series. But he did not consider the various items of our response, and preferred to comment on other unproven assertions. (For example, what do the words "verwachte aantal" mean? Translation: "expected number".) Unfortunately, the editors chose not to reproduce our second response regarding the erroneous report of Nanninga.

2) In The Skeptical Inquirer, Kurtz (1995) mentions three reasons (unfortunately unknown to us) why PARA rejected the claim of Gauquelin. He ignored completely the committee's real reasons for rejecting this claim, clearly recalled in The Humanist. Kurtz, as Editor, was present at the talk I gave in 1993 at the Oostende Meeting. In this reference (as in others), there is not one word about the mechanism we proposed to explain the formation of the theoretical histogram.

3) In Science et Avenir, Pecker (1995) has published a very good paper on the subject, but there are only six words (p. 24) about PARA's work. Although he reports the work done by the French committee — absolutely similar to the one conducted by PARA — he does not say anything about an analysis of the statistical mechanism as the one given by PARA in 1976.

4) Nienhuys (1993) in his article, "Dutch Investigations of the M. Gauquelin Mars Effect" in the Journal of Scientific Exploration, writes concerning our Committee:

p. 277: "...a test was undertaken that confirmed the effect" and "The Comitee PARA doubted the constancy of the births rhythm." But Nienhuys forgets to say that our criticism mainly concerns the ignorance of the probability of

the configuration C_k, and thus the secular demography. On the other hand, our check confirmed the computations made by Gauquelin. but *never* the Mars Effect.

p. 273: "...but the idea that athletes might differ from ordinary people is new" (by comparison of the Dutch research to the idea developed by the Committee PARA). Actually this is not new because it is evidently included in the probability of the configurations C_k the computation of which requires the knowledge of the secular demographic distribution of the sports champion (not of ordinary people, of course). This has been recounted in *The Humanist,* 36, 1, 1976, item 2.

5) In the *Journal of Scientific Exploration,* Ertel (1993) writes concerning refutations: "The first was the Belgian attempt, which failed (Committee PARA, 1976)". Where did the author find that PARA "failed"? Since the Committee clearly said that it could not accept Gauquelin's claim because it disagreed with the method used by him for computing the theoretical histogram, how can this be construed as failure by the Committee?

6) In *The Mars-Effect,* Benski *et al.* (1996), the French Committee gives a correct but very incomplete report on PARA's work. It is important to remark that their observation histogram shows the same "shape" as the one claimed by Gauquelin.

To make our position very clear, hereafter I summarize the difference existing between the understandings of the problem by Gauquelin *vs.* by the Committee PARA.

Differences in Methods

There are substantial differences between the method used by Gauquelin and that proposed by PARA to compute the theoretical histogram.

M. Gauquelin's Method

As explained in *Méthodes pour Étudier la répartition des Astres dans le Mouvement Diurne* (1957), Gauquelin considers three different parameters: M, A_i and D_i, the product of which should give the theoretical frequency of occurrence in a given class i ($i = 1, \ldots 12$) :

$$f_i = M \times A_i \times D_i \qquad (1)$$

According to Gauquelin, the definitions of these factors are :

1) factor M = mathematical mean: corresponding to a uniform distribution of the n sports champions of the sample in twelve classes of the same size. In the case of the sample considered by PARA, $M = 535112$.

2) factor A_i = astronomical factor: computed for each class $i = 1$ to 12. Its

value is obtained, for the diurnal classes or sectors, by the formula (ibidem. p. 59). See equation following.

$$A_i = \frac{1}{535} \times \sum_{n=1}^{535} \frac{(semi\ \text{diurnal arc})"\text{n}}{90^\circ} \qquad (i = 1 \text{ to } 6) \qquad (2)$$

A similar formula exists for the nocturnal classes i = 7 to 12.

These formulae are not really "given" by Gauquelin, but they may be easily established by following the description given by him of the successive steps for the computation of **A,** as explained in PARA's paper.

The time t_d really elapsed during the transit of the planet in any diurnal sector i (1 to 6), is (in days) for a given date:

$$\text{t}_d = \frac{1}{12} \frac{(\text{semi diurnal arc})"}{90^\circ}$$

and as a consequence, for the product M x A_i one finds:

$$M \times A_i = \sum_{n=1}^{535} t_{d,n} \qquad (i = 1 \text{ to } 6) \qquad (3)$$

where: $t_{d,n}$ is the value of t_d for each of the n = 1,2,3,... 535 individuals. This last expression is thus the mean value of the intervals of time that the planet sojourned in a given class i for the n = 535 birthdates.

3.- factor D_i = diurnal demographic factor: computed as proposed by Gauquelin by two different methods that have been reported in PARA's paper and of which the second has been retained by PARA because it appears more easy to handle, and because Gauquelin (1957, p. 82) estimates that it is the most accurate one. The expression of D_i is then (Committee PARA, 1976a, p. 340):

$$D_i = \sum_{i=1}^{12} \frac{f_{o,i} f_{\Delta\alpha,(i-j)}}{535^2} \qquad (\text{i, j} = 1,2 \ldots 12) \qquad (4)$$

where $f_{\odot,j}$ and $f_{\Delta\alpha,(i-j)}$ are respectively: 1) the frequencies for the Sun to be in the twelve classes **j** of Mars for all birthdates; and 2) those for the planet Mars

for the same birthdates to be in the same classes, but numbered from that occupied by the Sun and called ***i***. This automatically takes into account the nycthemeral distribution through the factor $f_{\Delta\alpha,(i-j)}$ (for the definition of $\Delta\alpha$, see Figure 4).

The computation of D_i as well as of A_i are thus ***dependent upon the statistical characteristics of the sample,*** which is generally not allowed. More, the demographic factor should be applied individually to each of the elementary periods of the interval of time 1872–1945 — and not replaced by means.

Now, as for the value of D_i being practically uniform for the twelve classes — Gauquelin proposed to consider it as a constant (according to his letter, March 28, 1969) and to write:

$$P_i = \frac{1}{535} \sum_{n=1}^{535} p_{i,n} \tag{5}$$

Using this expression and fully applying the prescriptions of Gauquelin, we found the distribution given in Table 1 of our paper of 1976 (p. 330) and shown in Figure 1 (dark drawing) with the theoretical distribution (gray drawing). The value of χ^2 was 26.66 for a degree of freedom of 12–1 = 11, leading to a probability of 0.5%, which is significant.

The Committee PARA Analysis and Method (Statistical Model)

In order to avoid any confusion such as those sometimes found in papers on the subject, we first want to recall that ***this method has been exclusively established by members of the Committee, and that Gauquelin had no hand in it.***

It is well known that the position of the planet in the sky moves in right ascension (α) and declination (6) but very slowly, by such a small amount that its position may be considered as invariant in one day and even in a few days to the needed accuracy. As a consequence, at any given date and thus for a given position (α, 6) of Mars, the "configuration" of the set of the twelve classes is entirely defined by these two parameters, but better by two others to which they are bound and that are described hereafter.

If $\Delta\alpha$ is the difference in right ascension between the planet and the Sun, the planet will have an hour-angle of $\Delta\alpha$ at noon (Figure 2 as given in our first paper of 1976a). Let us call $x = 12h + \Delta\alpha$.

Now, if we call ***y,*** the time elapsed by the planet in a diurnal class for the corresponding declination, the configuration of the set of the twelve classes for the considered date is entirely defined by the parameters ***(x, y).*** As a consequence, the instants of entries and exits of the planet in the 12 successive classes are those given in Table 1.

The reason for having substituted these parameters for the parameters (α, 6) lies in the fact that their tie is not ***biunivocal:*** to an (α, 6) group of parameters

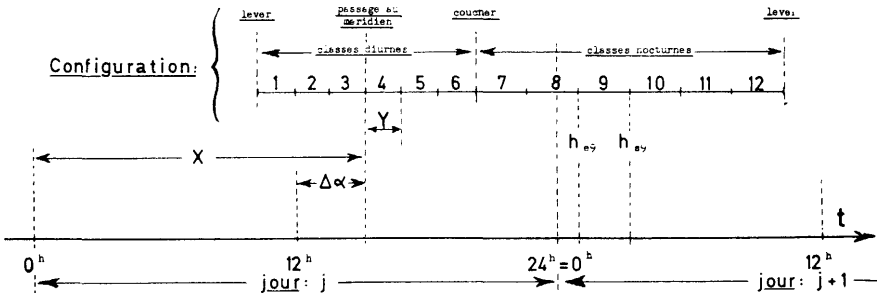

Fig. 2. Details of the configuration of the twelve classes of Mars inside a given day.

Table 1

Entries and Exits in the Twelve Classes as Functions of the Parameters **x** and y

Cl.	entries (diurnal)	exits	Cl.	entries (nocturnal)	exits
1	$x-3y$	$x-2y$	7	$x+3y$	$x+2y+$ 4h
2	$x-2y$	$x-y$	8	$x+2y+$ 4h	$x+y+$ 8h
3	$x-y$	x	9	$x+y+$ 8h	$x+$ 12h
4	x	$x+y$	10	$x+$ 12h	$x-y+$ 16h
5	$x+y$	$x+2y$	11	$x-y+$ 16h	$x-2y+$ 20h
6	$x+2y$	$x+3y$	12	$x-2y+$ 20h	$x-3y+$ 24h

corresponds an (x,y) group and only one, but to an (x, y) group may correspond many different (a, δ) groups.

This is due to the fact that the relative position of the Sun, Mars and the Earth shows a periodic motion (equivalent to the Saros in case of the Moon) of some 15 years (similar A a and 8 after one period) as illustrated by Figure 3 established for the period 1922–1937. The dots (in Figure 3) are the positions of Mars for the first days of each month in this period.

Moreover, the frequency distribution of the groups (x, y) for a uniform distribution of dates within the period 1872–1945 covered by the sample of the 535

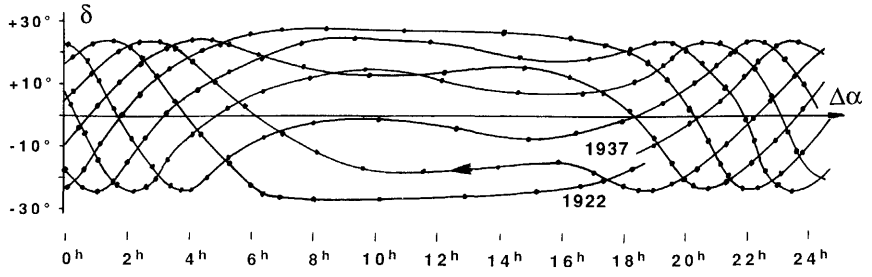

Fig. 3. The dots represent the successive positions of Mars for the first days of each month in the period 1922-1937 (period similar to the Saros in case of the Moon).

Table 2
Frequency Distribution of x and y (1872-1945)

limits in x	0h	4h	8h	12h	16h	20h	24h	Σ
x	2h	6h	10h	14h	18h	22h		
limits in y y								
2h40m	13	24	36	44	32	13		162
2h35m								
2h30m	7	17	27	30	16	5		102
2h25m								
2h20m	4	18	23	22	14	5		86
2h15m								
2h10m	8	12	24	22	12	5		83
2h05m								
2h00m	4	17	20	21	10	4		76
1h55m								
1H50m	4	12	22	19	13	6		76
1h45m								
1h40m	8	17	22	19	11	3		80
1h35m								
1h30m	5	18	28	22	13	6		92
1h25m								
1h2Om	11	21	35	30	24	10		131
Σ	64	156	237	229	145	57		888

sports champions is *not uniform.* Such a frequency distribution has been computed for equal intervals in x and y respectively by considering the 888 first days of each month in this period (January 1, 1872; February 1, 1872; ...December 1, 1945). It is given in Table 2. The probability of the arrival of the related configuration C_k, is thus not uniform also — even within a given interval of time where the dates are uniformly distributed.

This being said, the birth time of a given individual (sports champions or not) in a given class i should be considered as the successive "arrivals" of two different events (as follows).

1) The arrival of a day and thus of the related configuration C_k where k = 1 to 54, if we consider the subdivisions in x (6 intervals) and y (8 intervals) adopted in Table 2.

2) The arrival in this day, of the birth-hour and thus the arrival in one of the 12 classes of the diurnal motion of Mars in the sky, taking into account the nycthemeral distribution (Figure 4) — established for example by Mrs. Fr. Gauquelin (1959) who showed that it is secularly evolving.

The probability of the arrival of the sequence (day + hour) is then given (as is well known), by the product of the probability of the arrival of the configuration C_k by the probability of the arrival P_{i/C_k} of the class i in case that C_k has appeared. So that finally (as illustrated by Figure 5), the total probability

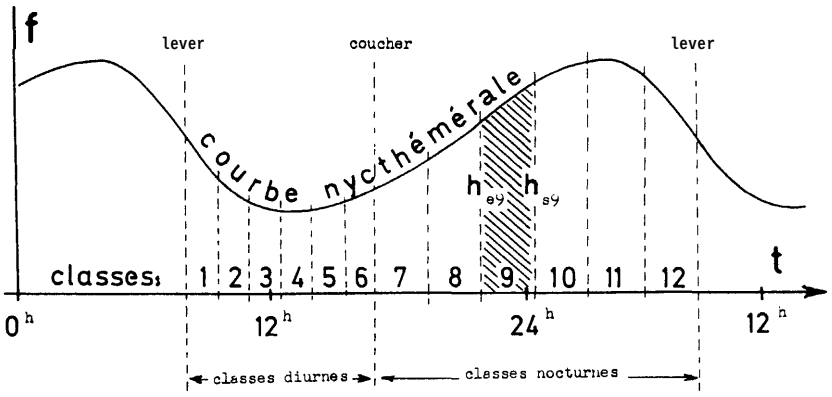

Fig. 4. Diagram of a typical nycthemeral curve.

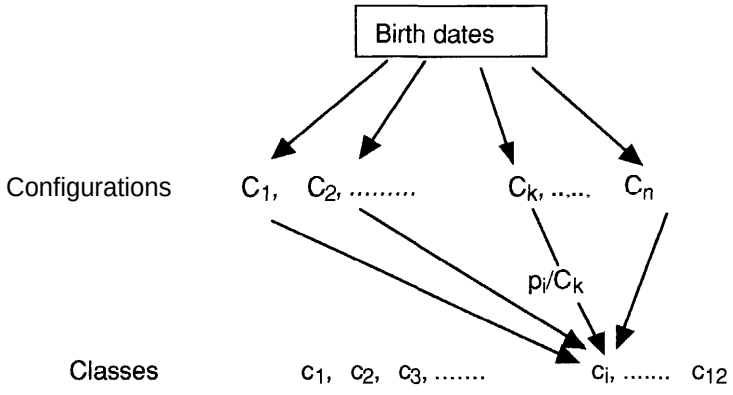

Fig. 5. Different statistical ways (k = 1 to n) leading to the arrival of a given class c_i.

of the arrival of any birth instant in a given class i, is the sum of the probabilities corresponding to each C_k:

$$p_i = \sum_{k=1}^{54} p_{C_k} p_{i/C_k} \qquad (i = 1 \text{ to } 12) \qquad (6)$$

If we compare this formula to the formula (5) finally proposed by Gauquelin, it appears that he admits:

$$p_{C_k} = \text{constant} = 1/535 \qquad (k = 1 \text{ to } 54)$$

which is erroneous !

After an extensive mail exchange on this aspect of the problem during many years, Gauquelin finally recognized the following — in a letter to us on March 7, 1970.

"Tout d'abord, je suis parfaitement d'accord avec vous sur deux points: les naissances des sportifs ne se rkpartissent pas de façon uniforme dans le temps (année, mois, jours).

En soi, la relation proposke par M. Dath dans sa note:

$$p_i = \sum P_{C_k} P_{i/C_k} \qquad (k = 1 \text{ to } 535)\ *$$

*It should be 54, and *not* 535!

ne souffre aucune discussion.

L'essentiel de notre dksaccord provient de ce que vous appelez p_{C_k} ce qui, à mon avis est clairement des p_{i/C_k}.

En conclusion, comme je vous l'écrivais dans ma lettre précédente du 2 dkcembre 1969: "dans le problème qui nous occupe, classique à ce point de vue, doit être considéré comme constant par dkfinition et uniformkment égal à 1/535."

Free Translation of the Above Letter

First of all, I perfectly agree with you on two points: the birthdates of the sportsmen are not uniformly distributed with time (year, month, day).

In itself, the relation proposed by M. Dath in his note suffers no discussion.

The essential of our disagreement comes from what you are calling p_{C_k} which, in my opinion, is clearly p_{i/C_k}.

As a conclusion, as I wrote it to you in my preceding letter of December 2, 1969: "concerning the problem we are interested in, classical from this point of view, p_{C_k} must be considered as constant by definition and uniformly equal to 1/535."

We may conclude therefore that the error of Gauquelin lies in the misunderstanding of the role of the configurations C_k.

First Conclusion

It has thus been clearly shown that the establishment of the theoretical histogram is the fundamental problem to consider, a problem essentially dependent on demographic factors.

The nycthemeral diagram is certainly such an important factor, but it appears that the *secular distribution* is probably the more important one. The

expression (Equation 5) of the probability of the arrival of any birthdate in any of the 12 classes in which the diurnal motion of Mars may be divided is the only one to consider.

Now, suppose that instead of a classical human population distributed over a given period, we consider a particular category of this population, as for example, the sports champions. One should take into account all other factors that are responsible for the characteristics of this population subset, such as economic or social features, ***etc.*** This may introduce various biases, and drastically change the numerical figures given in Table 2. And in that case, the theoretical histogram obtained by using Equation 5 may be very different from the one expected for the original population and thus, absolutely independent of any Mars Effect.

In the case of sports champions, it is easy to understand that there will be an important difference in their distribution diagram *if*:

- On one hand they are selected in a uniformly-distributed population over the considered period where the chances of being sports champions are equally distributed during this period or if
- On the other hand these distributions are not uniform.

One may imagine that the periods of the world wars have not been favorable in some countries to develop inclination towards sports activities as seen by the distribution diagram of the birthdates of the 535 sports champions in the period 1872–1945 (Figure 6). This, for example, could explain the differences in the results respectively found with American samples and European ones.

To secular ***socio-demographic effects*** may also be added some others as yearly ones, as shown by Dudink (1994). Samples of soccer players born in a

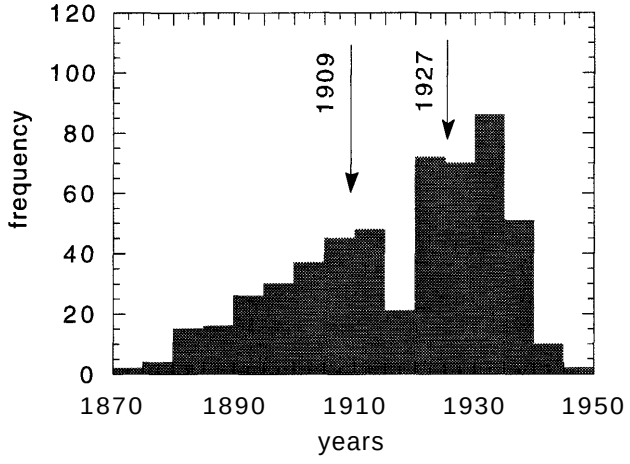

Fig. 6. Distribution diagram of the birth-dates of the sport-champions in the period 1870-1950.

same competition year show a typical non-uniform distribution diagram (Figure 7) which seems to be bound to their ages. This author also states that in a sample of 60 young tennis players — apparently because of a selection due to competition organization rules — half of them happen to have been born in the first quarter of the year.

The real problem is that in the present situation it seems difficult — if not impossible — to correctly estimate these impacts on the true concerned distribution diagram in such a way that it appears impossible to establish the correct theoretical histogram to which the observed one should be compared.

But in any case — as we hope to have shown in this article — the research made by Gauquelin is based on incorrect statistical principles, and *finally does not prove anything.*

Research Conducted Since 1976

As we said at the beginning of this article, a few research studies completed by the Committee PARA were conducted *after* the publication of N.B., No. 43. But this research was not communicated to Gauquelin — or to anyone else. This was because they would have needed an understanding of the mechanism of formation of the histogram expressed by our model, and also because (we learned by experience) it was difficult to keep them as unofficial working papers. On the other hand, none of the authors interested in the problem ever showed any agreement with our analysis — or ever contested it. So any discussion of this new results would have led to a blind alley.

Significant Questions and Considerations

But today, twenty years later, to be complete and to close our concern with this subject, the time has come to clarify the situation by making here — on the basis of some unpublished results — some general and final comments.

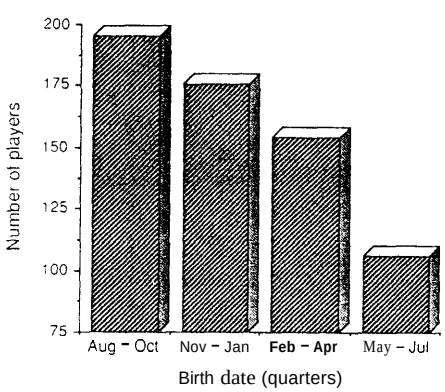

Fig. 7. Distribution diagram of soccer players in a same competition year.

- Why are the majority of the studies concentrated on classes 1 and 4 in the straight line of Gauquelin's proposal? Class 12 is as interesting as class 1 or the group of classes 8, 9 and 10 together (Figure 1). Actually we consider that none of these classes should be isolated from all the others. Only the whole histogram may have some significance and should be considered. Furthermore, one must remark (at least with our sample) that it may be represented by a tilted sinusoid showing an important and surprising discontinuity between class 12 and 1 — which has never been brought to attention nor explained! The observed sample recently considered by the French Committee shows the same shape (Benski *et al.*, 1996, p. 26) although less conspicuous (Figure 8). (It is regrettable that the theoretical or control histogram is not given.)
- It is surprising that nobody seems to be aware of the need for computing the theoretical histogram. Many authors speak about results "expected by chance" without giving the formula used to compute them. The impression that "by chance" the members of a sample of sports champions must be uniformly distributed in the twelve classes, is erroneous — as we have shown. The only correct formula has been given by the Committee PARA. If now someone does not accept it, he should explain why, and give his own understanding of the problem. It is surprising that we have been awaiting that for twenty years!
- The dependency of the results from the secular socio-demography is clearly shown in Figure 9, in which it appears that the shape of the histograms (obtained by dividing the material in three parts of equal importance) is evolving and is weakening from the oldest epochs to the more recent ones.

This characteristic is even observed with histograms obtained by dividing the statistical material in more than three similar subsets, as a function of the

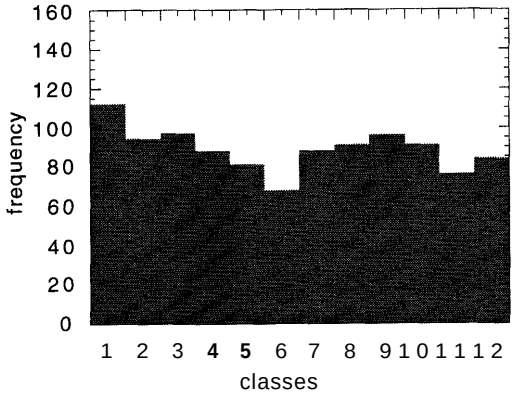

Fig. 8. Observed distribution diagram of the sports champions sample considered by the French-Committee.

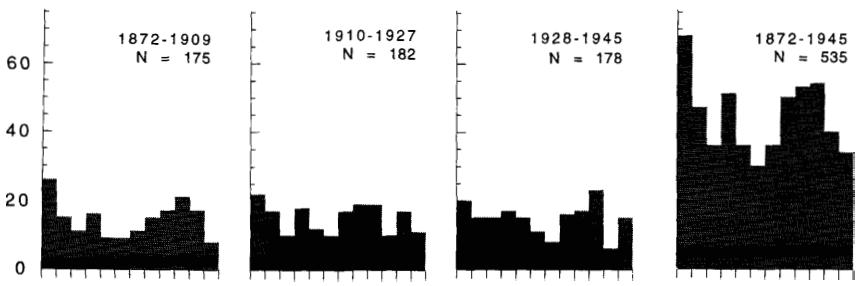

Fig. 9. Diagrams of the observed frequencies of the sport-champions for three successive periods of similar importance and for the complete one.

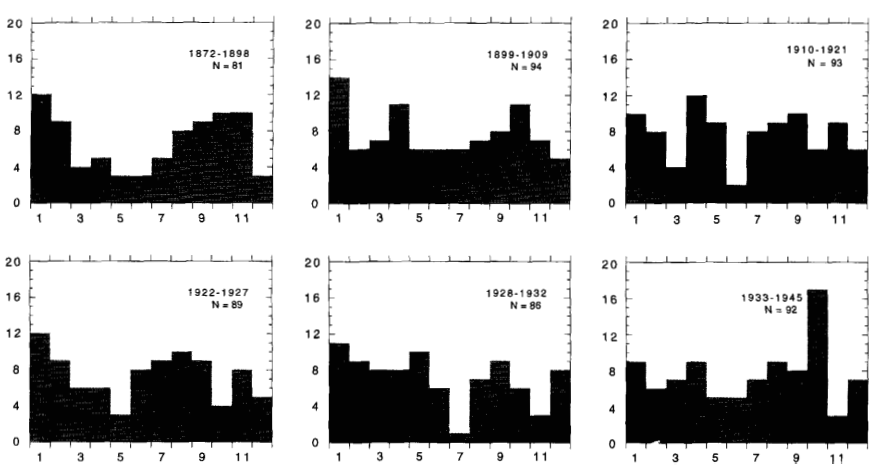

Fig. 10. Diagrams of the observed frequencies of the sport-champions for six succesive periods of similar importance.

dates. Figure 10 has been obtained by considering six such subsets. One should particularly notice the histogram concerning the period 1910–1921 — including the First World War — and which, for obvious reasons, should not be retained for discussion.

From these diagrams it appears that Gauquelin's shape of the diagram is

more pronounced for the oldest epochs, and is thus dependent on secular effects.

- Counter experiments conducted by various authors seem *not* to have been more successful in clarifying the situation. Such experiments were conducted by PARA, but on the basis of its theoretical conception of the problem — and was ready for publication in the years 1977–78 in our N.B., No, 44. It did not happen — as I said — because no one seemed to accept our analysis of what was needed to understand these experiments.

The first experiment consisted of keeping the birth dates of the sports champions, but mixing the birth hours as proposed by Gauquelin. But this has the disadvantage of using the sample itself to establish the reference diagram, and of keeping the same secular distribution of the dates and of the C_k. This is also the basic conception of the research by the French committee.

The second counter experiment deals with the idea that to avoid the consideration of Equation (6), one should need a sample of sports champions all born on the same day (or epoch). This is similar to the idea of Zelen (1976) — or at least on days (or epochs) leading to the same related configuration C_k because in that case one has:

$$p_{C_k} = 1$$

and thus:

$$p_i = p_{i/C_k} = p_{i(x,y)}$$

The theoretical probabilities may then be computed if, of course, the nycthemeral curve is known. For a first approximation, this may be ignored.

Following Table 2, it appears that the probability of the C_k is more constant in y than in x. Therefore the samples obtained by dividing the whole statistical material in subsets as narrow as possible in x will be more or less homogeneous, and thus more consistent with the wanted constancy of C_k. We tried a division in x as given — in Table **3.**

The observed frequency diagrams are those given in the last "column" of Figure 11 where the histograms obtained for the three intervals of time: from

TABLE 3
Distribution of Birth Dates of *535* Sports Champions

0h	to	7h59	(N = 133)	35%
8	to	11h59	(N = 127)	32%
12	to	15h59	(N = 153)	42%
16	to	23h59	(N = 122)	24%

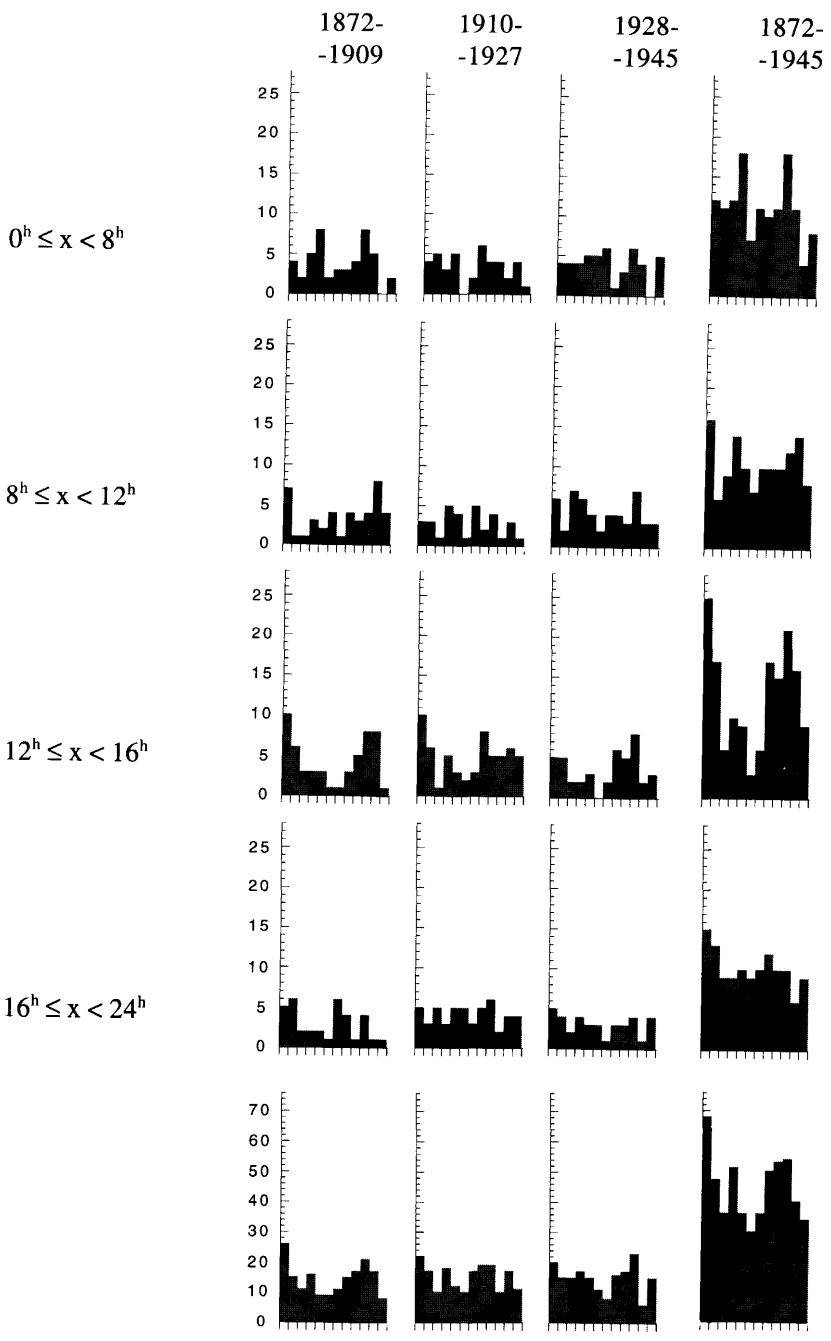

Fig. 11. Diagrams of the observed frequencies of the sport-champions obtained by considering the three periods of Fig. 9 and four intervals of the parameter *x* given in Table *2*.

1872 to 1909, from 1910 to 1927 and from 1928 to 1945 (as given in Figure 9) are also retained for comparison.

From these four last diagrams, it appears that Gauquelin's shape of the diagram is more pronounced for x between 12 and 16 hours, and thus *when the planet Mars is at its greatest distance* from the Earth.

But it is more important to state that this subset is the one containing the largest percentage of early birth dates as given in Table 3 (last column), showing again a dependency of the shape of the histogram on the secular distribution of the birth dates which confirms the role of the secular socio-demography (not astro-demography!) — unless one considers that the larger the distance of Mars, the more efficient is its influence.

Conclusion

All the above considerations have been conducted on the assumption that the sample of the 535 sports champions does not contain any clerical errors or bias introduced by Gauquelin in order to modify the statistical results.

Some authors claim that Gauquelin has falsified the data — without our knowing — or even falsified the whole sample. From our point of view, we never imagined (when starting our research), that this could have been possible — for various practical reasons.

Today we are even more certain — because no one could imagine Gauquelin modifying our sample in such a way that the diagrams of Figures 9, 10 and 11 would reveal socio-demographic effects whereas they were *unknown to him!*

This does not mean that there may be no erroneous data in the considered sample. But in such a case, we always come up again with the same problem of how to establish the theoretical histogram that could serve for comparison. Who could assure that the sample corrected for all these eventual anomalies is better than the original one?

The Opinion of the Committee PARA — Summarized

In a given population, the sports champions constitute a particular subset. The membership of each sports champion to this set results from a constellation of selection effects under which one must count socio-demographic phenomena (economy, wars, climate, baby-booms, *etc.)* and possibly other external factors, as for example — if real — a Mars Effect.

To isolate any of these effects, one must be able to compare a subset containing the considered effect to another subset free from this effect and from this one only. That means in the present case a subset containing the Mars Effect (the sports champions) to another free from the Mars Effect but containing all other selection effects. Unfortunately the latter sets are unknown and the comparison appears impossible.

What also should be retained from the discussion on this problem for 20 years, is that:

- All who believe in the phenomenon propose samples leading apparently to the existence of a Mars Effect.
- All who do not believe in it, propose samples leading apparently to the absence of any Mars Effect.

In conclusion, I think that this incredible problem will never receive any decisive answer. As we have already shown, Gauquelin has never demonstrated the reality of the Mars Effect — neither have those who later supported his ideas.

As people who a ***priori*** do not believe in astrology, we do not have to prove that the phenomenon does not exist. It should be the aim of the believers in astrology to prove that the Mars Effect is real and on the basis of acceptable demonstrations. To our knowledge, acceptable evidence has never been presented!

Acknowledgement

Dedicated to the memory of J. Dath (1918-1996), Professor of Statistics (Royal Military School of Belgium) one of the principal investigators of the Committee PARA in the Mars effect research.

References

Note: this bibliography is limited to only the papers here mentioned. More complete ones will be found in some of these papers.

Benski, C., Caudron, D., Galifret, Y., Krivine, J-C, Pecker, J-P, Rouzé, M., and Schatzman, E. (1996). *The Mars Effect.* Ed. Amherst, New York: Prometheus Books.

Committee PARA (1976a). Considtrations critiques sur une recherche faite par M. M.Gauquelin dans le domaine des influences planétaires. *Nouvelles Bréves,* 43,327.

Committee PARA (1976b). The Committee Para replies to Gauquelin. *The Humanist,* 36, 1, 31.

Committee PARA (1982). On the Mars effect: A last answer to M. Gauquelin. *The Zetetic Scholar,* 10, 66.

Dommanget, J. (1993). Guest column: The Comite PARA - A European skeptics committee. *Journal of Scientific Exploration,* 7, 317.

Dudink, A. (1994). Birth date and sporting success. *Nature,* 368, April, 592.

Ertel, S. (1993). Comments on the Dutch investigations of the Gauquelin Mars Effect. *Journal of Scientific Exploration,* 7, 283.

Gauquelin, Fr. (1959). L'heure de la naissance. *Population,* 14,683.

Gauquelin, M. (1955). *L'Influence des Astres.* Paris: Editions du Dauphin.

Gauquelin, M. F. & Gauqelin, M. (1957). *Méthodes pour Étudier la Répartition des Astres dans le Mouvement Diurne.* Paris: Imprimerie Graphi-Service.

Gauquelin, M. (1960). *Les Hommes et les Astres.* Paris: Edition Denoel.

Gauquelin, M. (1988). Is there a Mars effect? *Journal of Scientific Exploration, 2,* 29.

Kurtz, P., Zelen, M. and Abell, G (1979). Results on the US test of the "Mars effect" are negative. *The Skeptical Inquirer,* 4, 19.

Kurtz, P. (1995). New departure for the Skeptical Inquirer. *Skeptical Inquirer,* 19, 3.

Nanninga, R. (1993). *Skepter,* 6, p. 19.

Nienhuys, J. W. (1993). Dutch Investigations of the Gauquelin Mars Effect. *Journal of Scientific Exploration,* 7, 271.

Pecker, J. Cl. (1995). *Science et Avenir,* June-July, 101, 20-27.

Seidler, E. & Parienté, R. (1963). *Dictionnaire des Sports.* Collection Seghers.

Zelen, M. (1976). Astrology and statistics: A challenge. *The Humanist,* January-February, 32.