Esoteric Biorhythm Slide Rules

Detlef Zerfowski

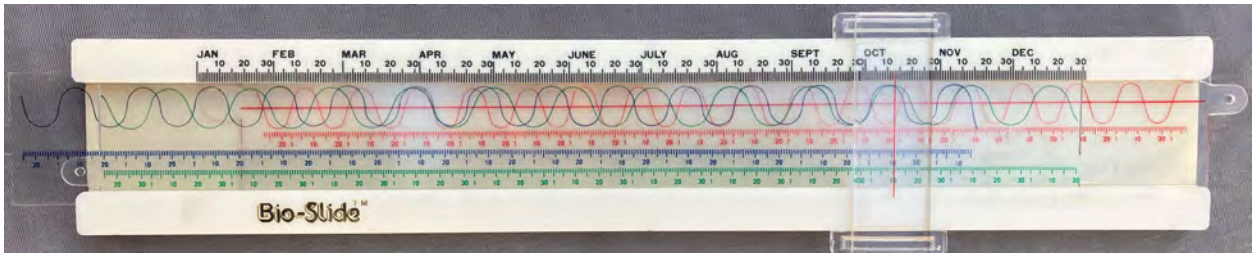

FIGURE 1. Bio-Slide Biorhythm Slide Rule (Source: Collection Zerfowski)

Prologue

Before starting the article, I would like to mention that I am not a follower, applicant, nor a fan of the biorhythm theory. The following sections will describe corresponding calculating devices. From my perspective, the theory of biorhythms is a scientifically refuted method to predict each person's "daily performance". Nevertheless, believers of this theory struggled a lot with error-prone calculations of so-called rhythmographs. Therefore, for the group of biorhythm believers, there was a demand for calculating devices to simplify calculating rhythmographs, which was required for each month. In this article, I will describe the historical background of the methods, the challenges of the required calculations, and some devices addressing these challenges. Special focus will be covered on the corresponding Faber-Castell 20/45, which I recently acquired and which was the initial trigger for this article.

Historical Background of the (Pseudoscience) Biorhythm

The origin of the biorhythm goes back to the early 20th century. Wilhelm Fließ (24 October 1858 - 13 October 1928) was a physician who was convinced that he identified regular and consistent patterns in diagnosing his patients.[1] At nearly the same time, the psychologist Herman Swoboda (23 November 1873 - 18 June 1963, at Vienna) came to similar conclusions. Swoboda published his ideas after Fließ and claimed that he did not know Fließ's work. As a result, a corresponding plagiarism dispute started.[2] It seems that Sigmund Freud, the famous founder of psychoanalysis, who had been in intense communication with Fließ and Swoboda, shared Fließ's confidential observations with Swoboda.

The disputed content was the supposed discovery of three generally applicable periodic waves defining the performance of each single person. These oscillations were identified as:

- physical (P) rhythm (23 days) (also called male rhythm)
- emotional (E) rhythm (28 days) (also called female rhythm)
- intellectual (I) rhythm (33 days)

All three oscillations start (as per Fließ and Swoboda) at the birth of each single person. Due to the different frequencies, over time, the sum of the waves might lead to a positive reinforcement, a negative reinforcement, or anything in between; this comprises these so-called biorhythms.

Fließ and Swoboda stated that during positive enforcement, the corresponding person will be successful, during negative enforcement, the person should avoid any risk. For evidence, Fließ gave examples from his medical work, especially from surgeries which went well and from those which did not go well. He correlated the success of each surgery with the patent's biorhythm. (Note by the author: I do not know if Fließ even considered his own and all of his surgical assistants' biorhythms as factors to the outcome of each patient's surgery. If yes, I assume there would hardly be any good time for a surgery because there will always be someone, patient, surgeon, or someone on the surgical team, with a bad biorhythm status. On the other hand, this always conveniently would provide a good excuse if something went wrong.)

Considering the above-mentioned rather straightforward rhythms, the mathematical background of biorhythms is quite simple. Let t represent the days since birth, then the above-mentioned rhythms can mathematically be described by

- physical: sin(2πt/23)
- emotional: sin(2πt/28)
- intellectual: sin(2πt/33)

Consequently, any combination of the three sinus curves repeats after 21252 days, which equals 58.18 years. (Note by the author: I missed that some months ago I passed my biorhythm from my birth date.)

Some Known Devices for Calculating Biorhythms

Believers in the theory of biorhythms try to align their lives to their own biorhythm. Therefore, they need to calculate the biorhythm of the upcoming days, weeks, or months. Today, this is quite easily calculated by use of the corresponding apps. The only required data to be entered is the birth date. But before the rise of computers and scientific pocket calculators, not to mention smartphone apps, calculating the biorhythm values for an entire month was cumbersome and prone to errors. This was considered "really dangerous", and the biorhythm literature especially targeted and warned physicians and surgeons of the risks. It seems that certain groups of these people planned surgeries accordingly. Therefore, several calculating devices were invented to simplify calculating biorhythms, typically on a monthly basis. All devices need to calculate the following three values, where d is the number of days since date of birth:

- P = remainder of d/23.
- E = remainder of d/28.
- I = remainder of d/33.

These values are shown on different scales. In other words, each sinus curve is divided by its divisor into 23, 28 or 33 intervals, always considered one day long. The above calculated remainders can be considered as the interval numbers for the corresponding rhythm. Typically, on each of the scales, the first half of the intervals belong to the positive part of the rhythm and the second half to the negative part of the rhythms. Both halves of the rhythms are graphically represented either by corresponding half sinus waves or by different colors.

Obviously, with the calculation comes the following challenges:

- Challenge 1: Dealing with different length of month.
- Challenge 2: Managing leap years.
- Challenge 3: Avoidance of having to start all calculations from the date of birth, that is, developing a workable system that permits calculations to be standardized to Jan 1 of the year of birth.

The aforementioned Challenge 3 is addressed by a table of index values for the three rhythms defined for the beginning of each year. Since the date of birth is defined by 0 values for the three rhythms, the offset between the date of birth and the 1st January of the year of birth is manually calculated without the device. In the next step, according to the table, the values of the target year plus the month in focus (i.e., today's month and year) are determined. Next, the calculated offset values are entered into the device. Now, the device is set to the biorhythm values of the person with the given date of birth, and by operating the device stepwise one day after another, the readings provide the biorhythm for each of the following days.

HFZ Bio Calculator

The HFZ Bio Calculator is a simple and inexpensive calculator, copyrighted in 1938. Each slide carries a scale of 74 cells. The m(ale) scale runs three times the 23 cycle (0 to 22) plus 5 additional days (0 to 4). The f(emale) scale (German: w(eiblich)) provides two times the 28 cycle (0 to 27) plus 18 days (0 to 17). The int(ellectual) scale covers two times the 33 cycle plus 8 days. The positive part of the rhythms is given in a different color than the negative part. Due to the black-and-white image available to me, the used colors are not known.

The outer-most scales show the days of the month. One runs from the 1st of a month until the 31st, followed by the 1st day of the next month. For a month with 30 days only, one has to switch to the opposite scale starting with the 1st day of the month right after the 30th day of the previous month. There seems to be no additional support for February or leap years.

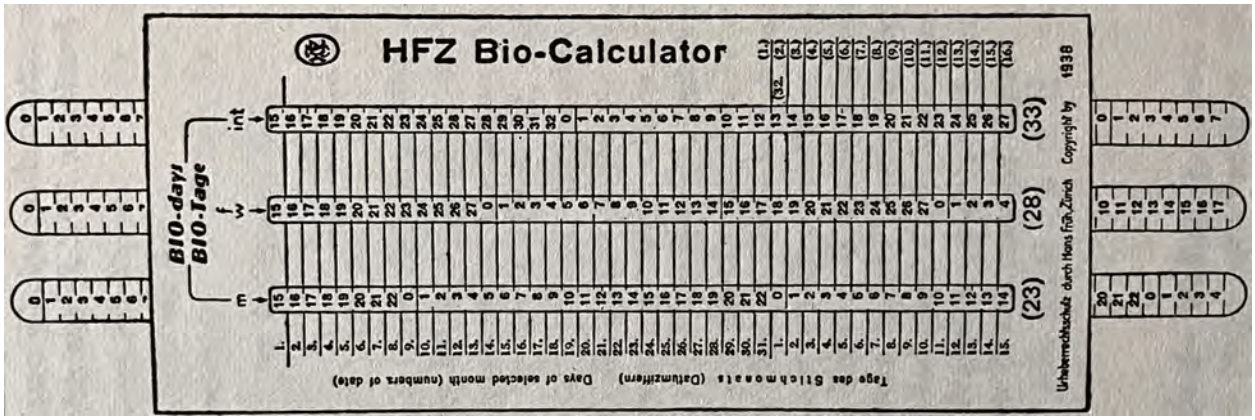

FIGURE 2. HFZ Bio-Calculator[3]

HFZ BIO-Berechnungsgerät

This quite expensive device uses the same approach as the cheaper HFZ Bio Calculator. According to Früh[3], page 165, the item sold for 275 Swiss Francs. Mechanically it is not a slide rule. Based on Figure 3, the three rhythms run on tapes. From the picture, it is not visible whether these tapes are closed loops or if they are wound at the bottom or top of the device. It is assumed that after the proper set-up of the device, the biorhythm of the following days will be identified by rotating the round crank at the left side of the device.

HFZ circular BIO Calculator

Again, according to Früh[3], page 170, the HFZ BIO-Calculator, made of Eloxal[4], shows the biorhythm for one entire month and can be used until the year 2050. This device sold for 35 DM. The copyright year shows 1959. Five rings carry from the inner to the outer ring, the P-rhythm, E-rhythm, I-rhythm, weekday, and the day of the month. On the visible top half of the disc, each ring show 32 cells. Therefore, the rings cannot carry closed periodic numbers, that is, for a full turn with 64 cells, a second complete I-rhythm of 2 x 33 cells would not fit. Compared to the inexpensive HFZ Bio Calculator, which has 74 cells on the slides, the rings of the circular version are at least 12 cells shorter. More details are hidden behind the cover of the lower half of the disc. In his books, Früh noted that his bio calculators were very successful and sold by the thousands. I have not come across any of his devices which have survived. Either they were not so successful or the users simply threw them away. Even into the 1980s, similar simple devices were sold, also in combination with corresponding books on the topic (e.g.: Böhm[5]).

Faber-Castell 20/45 Bio-Rhythmograph System Siewert

The device might have been manufactured during a period between the late 1960s (because of Siewert's 1966 patent[6]) and the early 1970s. Exact manufacturing dates are not known to the author. The mechanical design of this Faber-Castell biorhythm calculator differs from other devices. Let us have a closer look at the design and its usage. Fortunately, the manual of the Bio-Rhythmograph is on the back of the slide rule box. The box is 33.8 x 6.8 x 2.3 cm in size. In the box center, the calculating device is mounted and is about 10 cm wide (see Figure 4, the black framed part). At the right of the calculating device, four metal slides of different lengths can be pulled out. The lower three slides carry the periodic numbers (cells) of the different rhythms. The lower slide contains 2 x 23 (partly red-colored) cells plus an additional 10 cells. The slide above contains the E-rhythm with 2 x 28 (partly blue-colored) cells plus an additional 5 cells. The partly green-colored slide represents the I-rhythm with 2 x 33 cells. The top most slide shows only 4 cells with numbers 1 to 4; this slide is a special improvement by Käthe Siewert[6], which will be described below. This slide partially covers a fixed scale giving the days of a month from 1 to 31. An identical scale for days of the month is shown below the first slide as well. With this, the entire mechanics of the device is completely described.

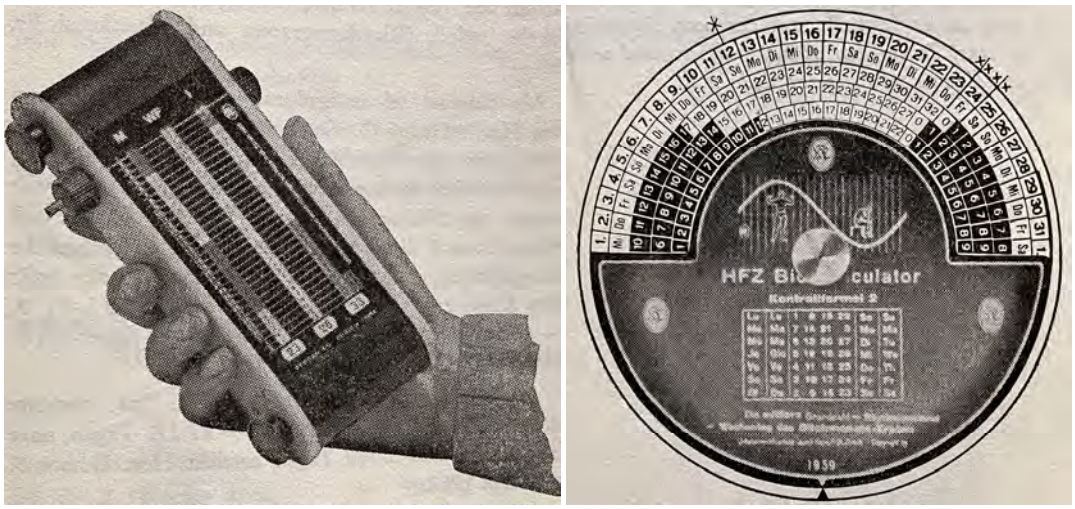

FIGURE 3. HFZ Bio-Berechnungsgerät (left) and HFZ Circular Bio Calculator (right).[3]

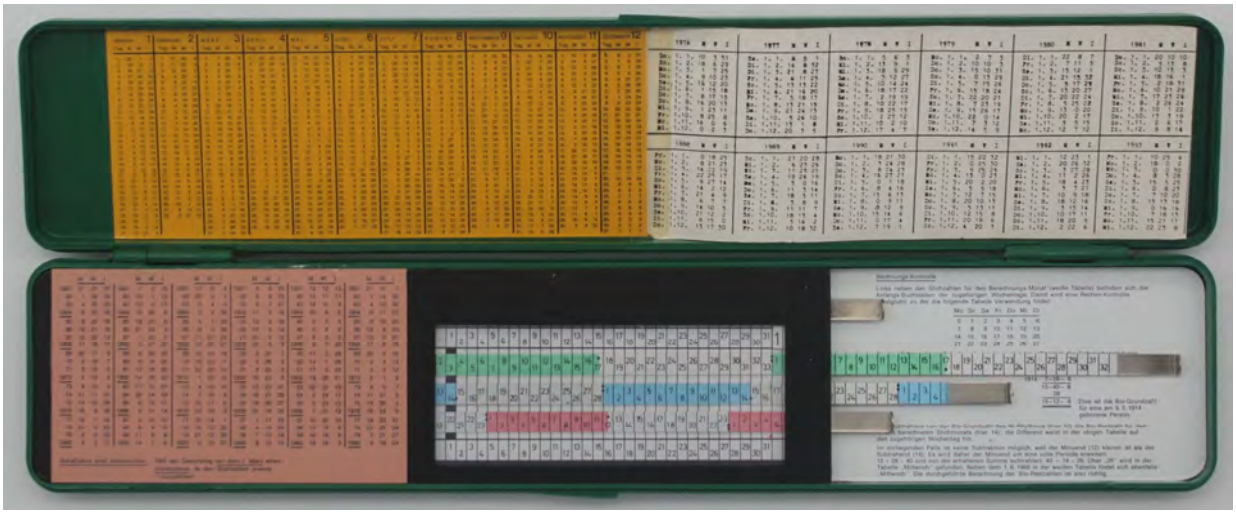

FIGURE 4. Faber-Castell 20/45 Bio-Rhythmograph (Collection Zerfowski).

Inside the box lid and on the left of the calculating device, three different tables are given. These tables are used to determine the start configuration for calculating a biorhythm for a dedicated date. The yellow table, located to the left inside the lid, gives the M, W, I values (i.e., P, E, I values) for a given birthday, independent of the year. The pink table, left to the calculating device, provides corresponding values for the year of birth. The white table gives the M, W, I values for the 1st of each month for the years 1966 until 1999.

To determine a bio-rhythmograph for 1.6.1966 (1 June 1966) of a person born on 5.2.1914 (5 February 1914). the device is set up as shown in Table 1 (see also Figure 5):

TABLE 1. Setting Up the Faber-Castell 20/45 Bio-Rhythmograph

		M (P)		W (E)		I
Read values from yellow table for	5.2.	8	-	22	-	0
Read values from pink table for	1914	7	-	18	-	8
Read values from white table for	1.6.1966	5	-	2	-	28
Add above values		20	-	42	-	36
Subtract full periods (23, 28, 33)				28	-	33
Final numbers for setting up the device		20	-	14	-	3

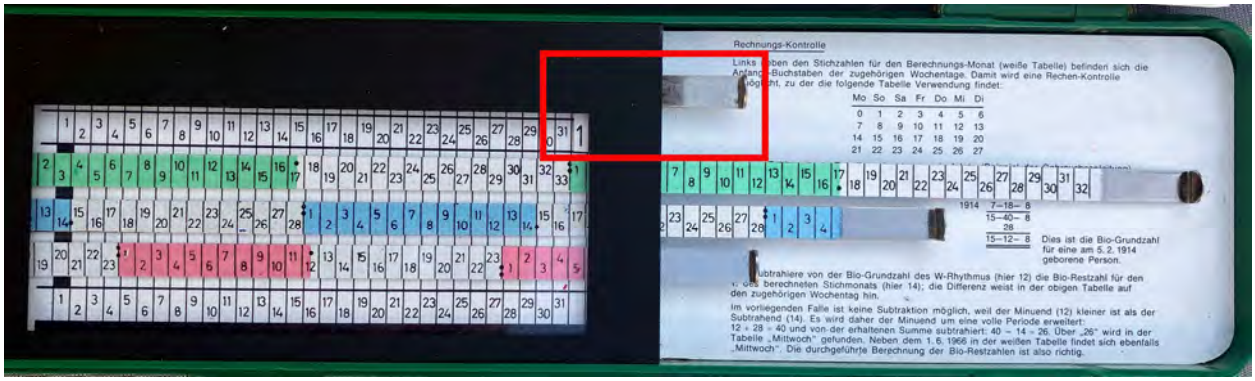

FIGURE 5. Example Calculation with Faber-Castell 20/45 Bio-Rhythmograph.
Red marked rectangle is Siewert's improvement from the patent[6]

The user of the device takes the number 20 and pulls the lower (pink) slide until the number 20 stands above the first day of the month on the left of the lower fixed scale. The same is done for the number 14 with the blue-colored slide and for the number 3 with the green-colored slide. With this set-up the user can read his biorhythm for the entire month (June 1966). The colored parts on the slides identify positive rhythms, the white parts represent negative parts of the rhythms. Days showing colored cells on all three slides are good days according to this esoteric theory. On days showing only white cells, the person should be really cautious.

Thus far we have considered only three of the four slides. The fourth, topmost slide relates to an invention by Käthe Siewert, for which she received a patent.[6] At the time of the patent application, Siewert lived at Erlangen, close to the Faber-Castell plant. This small improvement justified the name "System Siewert" of the Faber-Castell 20/45 Bio-Rhythmograph. The patent refers to the books[3,7] published by Hermann Bauer Verlag. Apparently, this publisher was successfully selling esoteric literature.[8]

Reviewing Siewert's improvement, we can see that it addresses the different number of days per month. It is a very short slide with only numbers 1 to 4 and represents up to the first 4 days of the following month. If the user pulls the slide to the very right, only the number 1 is visible and stands just behind the 31st day of the upmost, fixed scale. In our example, we determined the biorhythm for the month June 1966, which has only 30 days. Therefore, Siewert's slide is positioned in such a manner such that the 1 comes next to the 30th day of the top scale. In this case, the 1 represents 1st July 1966 and below this cell the user can read the biorhythm for 1st July, the first day of the month following June 1966. Determining the biorhythm for the entire next month (July 1966) now becomes quite easy. Taking the cell entries below the first Siewert cell, the user moves the slides so that these values are located left below the first day of the month. Now the biorhythm for the month July 1966 is shown. With this approach, a biorhythm over several months can easily be calculated.

With these above calculations only one exception needs to be considered. If the person's date of birth was in a leap year and before 1st March, then the corresponding M, W, I values in the pink table need to be added by 1.

The Faber-Castell 20/45 originally came with white tables for years 1966 until 1999. I easily "upgraded" the device by extending the tables with Excel even including the fact that 2000, the exceptional century year, had been a leap year. My Faber-Castell is now ready for use until 2100. A further "upgrade" can easily be provided.

Bio Slide from Taiwan

Figures 1 and 6 show a Taiwan-made slide rule with three transparent slides, each carrying one sine curve over the corresponding day scale. The red scale represents the P-rhythm, the blue scale shows the E-rhythm and the green scale stands for the I-rhythm. The upper body frame provides a scale for all days of one entire year. On the back of the slide rule, a table of the starting parameters for each year from 1896 until 1987 is given. Unfortunately, in the index tables the year 1900 is considered as a leap year, which is incorrect. According to the rules of the Gregorian calendar, all years which can be divided by 4 are leap years, with the exception of full century years, that is, those years divisible by 100, which are not. There is an additional exception from the exception: each year which is a multiple of 400 is again a leap year. Therefore, the years 1700, 1800, and 1900 were not leap years, but the year 2000 was a leap year. (Note: the current calendar rules do have limitations: around the year 4813, as a very

exceptional case, one regular leap year might need to be skipped to get the calendar back in synchronization with the exact position of the earth's orbit around the sun.) Considering 1900 as a leap year would lead to an offset of the biorhythm by one day for persons born before 1st March 1900 and also for calculating biorhythms after 28th February 1900. Thus far, I'm not aware of any complaints regarding this 'bug' of the calculator.

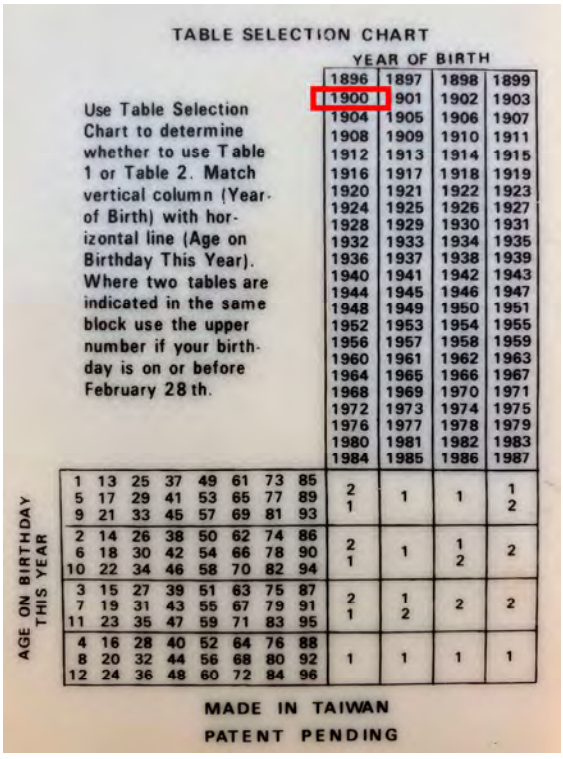

FIGURE 6. Part of Backside of Bio-Slide Biorhythm Slide Rule (front see Figure 1). The "bug" is marked in red: The year 1900 is incorrectly considered as a leap year.

Biomate from Japan

The Biomate is a Japanese-made, widely-sold circular biorhythm calculator. The corresponding patent[9] was filed in 1968. It consists of four non-concentric gear-wheels, P, I, S, and D. The P, S, and I wheels are driven by another gear-wheel which is manually operated (see Figure 7). Behind the operation wheel on the same axis, a smaller gear wheel is mounted, which drives the D-wheel.

- The P-wheel covers two cycles of the physical rhythm (2 x 23 teeth) and carries a closed red curve with two maxima and two minima.
- The I-wheel covers two cycles of the intellectual rhythm (2 x 33 teeth) and carries a closed green curve with two maxima and two minima.
- The S-wheel covers three cycles of the emotional (the patent[9] calls it "sensitive") rhythm (3 x 28 teeth) and carries a closed blue curve with three maxima and three minima.
- The D-wheel covers one entire year, with one tooth for two days.
- Initially, the different wheels can be set to predefined values. Afterwards, the P, I, S and D wheels rotate by using the operating wheel.
- Under the fixed cursor line, the biorhythm for the corresponding day (D-wheel) can be read. On top of the cursor, a magnifier lens allows an easier reading of the day on the D-wheel.

The device came with a certificate by the Japan Biorhythm Association.

Kosmos Pocket Calculator

The Kosmos pocket calculator is a representative example of biorhythm pocket calculators entering the market in the 1970s. Several brands were sold, e.g., the Casio H-801 BIOLATOR, Radio Shack EC-314 Biorhythm Computer/Calculator, Mini Bio Kosmos Calculator, and others.[10] The number of brands and the fact that many of these electronic devices are available on eBay, indicate that there was a significant market for biorhythm pocket calculators, mainly manufactured in Japan or Taiwan. Searching the German patent database (https://www.dpma.de/index.html) for the keyword "biorhythm" for Japanese patents gives a notable list of 66 patents. The same search for US patents results in 25 hits. A German patent search (German search term "Biorhythmus") gives 6 hits. Searching for British patents, only one result is shown.

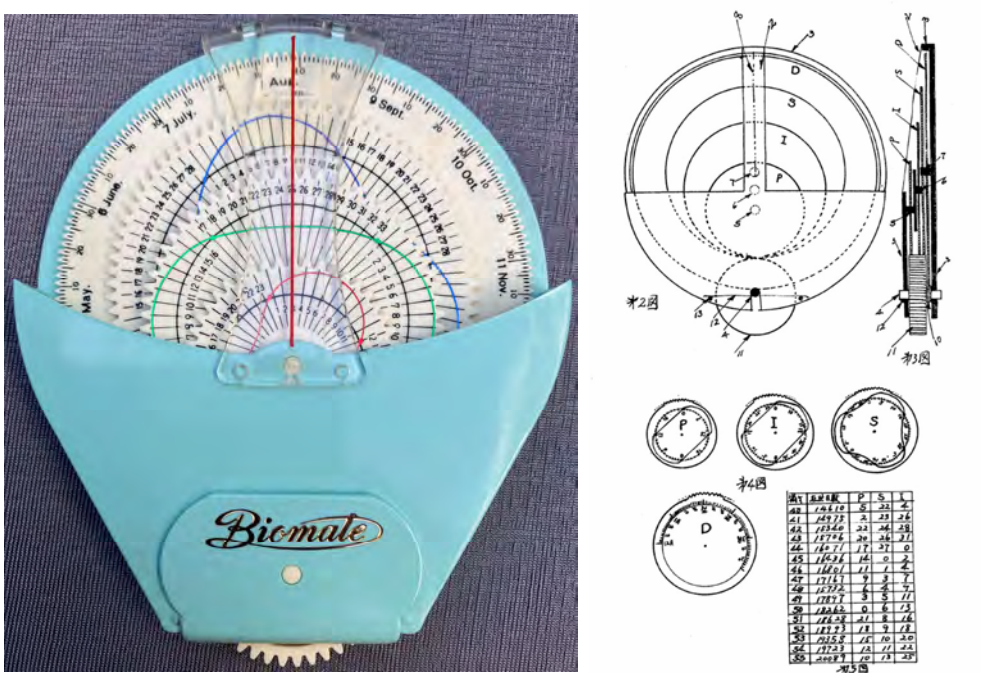

FIGURE 7. Japanese Biomate Calculator (Collection Zerfowski) and Drawings from Patent[9]

FIGURE 8. Kosmos I Pocket Calculator Specialized for Calculating Biorhythms (Source: eBay).

Certina Biostar Watch

Finally, a biorhythm calculator for the wealthy man deserves some consideration. By 1965, the Certina Biostar watch (see Figure 9) had entered the market. In 1971 an electronic version, the Biostar Electronic, was also sold. Since the biorhythm depends on the date of birth, the Biostar watches had to be mechanically configured before use. A 1972 advertising brochure[11] for the Biostar-Electronic, in German, can be found online.

Epilogue

Due to the high manual effort required in calculating biorhythms, this esoteric concept did not spread much beyond its core followers of the theory.

FIGURE 9. Certina Biostar: Mechanical Watch with Biorhythm Display (Courtesy of Pascal Wattenhofer, https://www.vintagecertinas.ch/de/biostar).

As late as the mid-1970s and even into the 1980s, simple biorhythm slide rules to aid in their calculation continued to receive patents.[12,13] It is also noted that, in the 1970s, biorhythms enjoyed a significant revival. This was not due to new scientific proofs of the theory, but because of the advent of the first pocket calculators with graphical displays and eventually, of affordable home computers. Biorhythms could now be easily programmed and visualized. Incidentally, many users of these new calculating devices programmed biorhythms, not because they believed in the effectiveness of biorhythms, but to demonstrate their programming skills to others. By the way, I was one of them….

The physiologist Gordon Stein in the book *Encyclopedia of Hoaxes*[14] wrote:

> "Both the theoretical underpinning and the practical scientific verification of biorhythm theory are lacking. Without those, biorhythms became just another pseudoscientific claim that people are willing to accept without required evidence. Those pushing biorhythm calculators and books on a gullible public are guilty of making fraudulent claims. They are hoaxers of the public if they know what they are saying has no factual justification."

Because I come from a scientific background and education, I definitely disagree with the theory of biorhythms. Nevertheless, the corresponding mechanical calculators for biorhythms are really special items in my collections. Interestingly, even at the present time, there still seems to be many believers in this pseudoscientific theory.

Notes

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