

HISTORICAL PERSPECTIVE

Note on an Early Physiological Index of ESP: John E. Purdon's Observations of Synchronous Pulse Rates

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Abstract—The purpose of this Note is to rescue from oblivion the nineteenth-century researches of physician John E. Purdon with measures of pulse rate synchrony between two persons. This was done using a sphygmograph, an instrument that measured pulse and provided graphic tracings on paper. According to Purdon, he found some persons reproduced the tracings of others in conditions that he considered to imply a telepathic transfer. Purdon speculated that one person produced emissions of nervous force that were propagated to others via the ether. While this research may be criticized from the point of view of modern research standards, it is presented here as an interesting and generally unknown early instrumental study of the concept of the detection of ESP via a physiological response.

Keywords: John E. Purdon—sphygmograph—physiological ESP response—pulse and ESP

The use of instrumental monitoring of different physiological processes as an index of ESP functioning is well-known in experimental parapsychology.¹ Some of the earlier work on the topic—such as that conducted by Hettinger (1952: Chapter 9) and by a research committee of the American Society for Psychical Research (Anonymous 1959)—is not well-known. But even less known is the Nineteenth-Century work discussed here.²

In this Note, I describe research and observations of instrumental pulse measurements conducted by John E. Purdon in the early 1880s that he believed showed evidence of a psychic connection between two persons. Myers referred to this work as an attempt, which he did not find convincing, “to show by sphygmographic tracing the influence of an agent’s thought in bringing a percipient’s pulse to the same rhythm” (Myers 1893:32), while American philosopher William Romaine Newbold described the work as cases “in which the pulse-wave of one patient seemed to be telepathically transferred to another, the patients giving identical tracings” (Newbold

1902:103). I am presenting a short discussion of Purdon's work for its historical value, and not to defend the investigations as evidence for ESP functioning. That is, I write to inform current students about a nearly forgotten example of the use of physiological measures as ESP responses.³

John E. Purdon and the Sphygmograph

Purdon

According to Stone (1898:414), John Edward Blakeney Purdon was a physician who was born in Dublin in 1839. He was educated and trained in medicine at Trinity College, Dublin. There he obtained a degree in arts in 1862, having been granted the year before a senior moderatorship (honors degree) and a gold medal in Experimental and Natural Sciences. In 1863 he obtained two degrees, Bachelor in Medicine and a Masters in Surgery. Finally, he qualified for the M.D. in 1885.

Purdon lived in India serving as a surgeon in the British Army starting in 1865. During the next years he studied, and presumably treated, diseases such as cholera and dysentery. His work in India gained him "the special recognition of the British government . . . and [he] was recommended for his zeal and ability" (Stone 1898:414).

In 1881, when he made his first observations of synchronous pulse rates, he was in charge of a military hospital in Guernsey, the Channel Islands. After retiring from the Army in 1883, Purdon lived in the United States. He was described by Alfred Russel Wallace as "an army surgeon, who has been much in India, and seems a very intelligent man" (Marchant 1916:195). According to his grave record, he died in 1925 and was buried in California.⁴

By his own admission, Purdon (1892:385) started psychic studies in 1871. This included sittings with medium Florence Cook (Purdon 1902; see also Marchant 1916:195). Purdon's name appears in early member lists published by the Society for Psychical Research (Anonymous 1883:324). In addition to his work with synchronous pulse, Purdon published several papers related to spiritualism and psychic phenomena. These included topics such as materialization phenomena (Purdon 1881c, 1884, 1902), mesmerism (Purdon 1881b), physiological observations and ideas about mediumship (Purdon 1881a, 1885, 1892), and various theoretical ideas (Purdon 1883, 1893a, 1893b).

The Sphygmograph

Purdon's work on pulse synchrony was done using a sphygmograph. This was a device that became fashionable during the Nineteenth Century to measure

the pulse and to provide a graphic representation on paper of such activity. Interest in such measures was part of the concern many had during the period to develop accurate instruments to measure physiological processes (Reiser 1978). Aspects of the history of the sphygmograph, and its variations, have been discussed by Frank (1988), Moss (2006), and Reiser (1978), and there are many publications about it by physicians (e.g., Bramwell 1883, Dudgeon 1882). Initially a bulky instrument, it was considerably reduced in size into a portable machine by Marey (1860), and eventually others developed several even smaller variations (Lawrence 1978, 1979). For a history of this instrument, go to http://vlp.mpiwg-berlin.mpg.de/technology/search?-max=10&-title=1&-op_varioid=numerical&varioid=11

Many had great hopes for the instrument. For example, in his textbook *The Science and Practice of Medicine*, William Aitken (1872) wrote:

In the conventional routine of 'feeling the pulse,' the unaided sense of touch is quite unable to distinguish many of the finer features which the sphygmograph enables us now to appreciate. . . . In place of its being able to take the place of 'feeling the pulse,' it will not only extend our practical knowledge . . . , but it will define and greatly extend our knowledge of the more delicate characteristics of the pulse which the sense of touch fails to discover. (Aitken 1872:313)

Others used the instrument in areas such as the study of the effects of drugs (Owens 1885).

But, as with other physiological measurement instruments, there were also measurement and technical problems as well. Frank (1988:239) has shown an incline in medical articles mentioning the sphygmograph from 1855 to 1879, and a decline between 1880 and 1889. As he observed, "sphygmography in the last decades of the Nineteenth Century did not fulfill the great expectations so enthusiastically announced in the 1860s . . ." (Frank 1988:224).

While Purdon started writing about his use of the sphygmograph in 1881, when the decline in its use had started, the instrument was still used by many. Interestingly, Purdon rarely mentioned which sphygmograph he used, a point made by a commentator (Gillespie 1898). In a later paper Purdon (1901:723) stated he had used Dudgeon's sphygmograph.⁵ The instrument is pictured in Figure 1, but it is unclear if Purdon used the same model all the time.

Purdon's Observations of Synchronous Pulse Phenomena

Purdon published his observations in several places (e.g., Purdon 1882a, 1882b, 1896, 1898), and presented his work at conventions (Anonymous

1889, Purdon 1901; see Figure 2 and Figure 3). His work attracted some attention and comments in various magazines and journals. Examples include *Current Opinion* (Anonymous 1893a), *Edinburgh Medical Journal* (Gillespie 1898), *Medical Age* (Anonymous 1893b), and the *Journal of the American Medical Association* (Anonymous 1889).⁶

Purdon said that while he was working in a hospital in Guernsey two soldier patients, Private W. (an epileptic) and Private L. (who suffered from bleeding from a nostril), both who he believed showed an arthritic diathesis,⁷ reported unusual knocking sounds around them and “the presence, visible and tangible, of a hand, and the figure of a man . . .” (Purdon 1882a:25).⁸ He later found out that the apparitions coincided with a “fit” experienced by the wife of a hospital orderly located on the opposite side of the wall of the soldiers’ room. She was said to suffer from hystero-epilepsy and had occasional “spasms.” The woman, and the soldier, were considered by Purdon to have abnormal nervous systems. Here Purdon shows that he was drawing on the ideas of Charcot (1872–1873) and others (e.g., Richer 1881), which were very influential for a while. Furthermore, and as seen later, Purdon was one of those who combined the idea of abnormal nervous functioning and *real* psychic phenomena, both mental and physical. By *real* I mean here that the phenomena observed were believed by Purdon to be veridical, and not accounted for by conventional processes.

Purdon wrote as follows:

During the ten days that my observations continued, I took many scores of traces with the sphygmograph finding the likenesses between the curve of Private W . . . and the young woman next door to be often remarkable. On one occasion I found that Private W . . . Private L . . . and myself were showing the same pattern almost exactly. That night our neighbour was eliminated as a disturbing cause, for she was laid up with a very bad sick headache . . . (Purdon 1882a:26–27).

In another paper Purdon discussed a “discovery” he made in June of 1881. He wrote:

I was taking the tracing of a young lady who was lying down with a menstrual headache, her hand being held by an older lady, her first cousin, when I suddenly saw the pulse curve change to that of the other, which I had more than once taken that morning. There could be no mistake about the resemblance, for the tracing of the other person was very characteristic and so familiar to me that such would have been a moral impossibility under the circumstances.

I repeated the observation, taking the tracings of each woman repeatedly, and found more or less resemblance between the tracings of the elder and one side of the younger. . . . This relation had to do in my mind with the state of susceptibility to change, disturbance, or irritation of the nervous system of the younger, as depending upon the presence of the catamenia. I did not consider that the factor of blood relationship played any prominent part in the forced resemblance, for in general the tracings were quite dissimilar; nor could any tendon jerk or muscular pressure from the holding of hands account for it, for they were quite quiescent before I started the clock-work of the instrument.

I determined to make an exhaustive study of both pulses, and, during the ensuing month, I made observations every day, or nearly so, and frequently several times a day, night and morning. After the passing away of the menstrual period I was not able to trace any likeness between the pulse tracings of these ladies; and as the time for the return of the same came round I prepared for a careful set of observations. I had everything made ready in the elder lady's room, and succeeded in getting some very sharp tracings, but, strange to say, I did not get the resemblance I had been so earnestly expecting, but a most exact and most perfect reduplication of my own pulse tracing, which was in general quite different from those of either of the two.

Nothing was left to me but to go on observing, and I found that as the days of the periodic disturbance wore away, the tendency to repeat my tracing disappeared also. I continued my observations on these ladies daily for two months more, with complete confirmation of results before obtained; the likenesses being always at the time of the menstrual nusus, and gradually fading away with it.

The younger lady always showed a marked difference in the two wrists at that time, the left being the one which took on the forced likeness, while the right pulse always gave evidence of what I considered to be a hemorrhagic pulse, judging from those I had seen in persons subject to nose bleeding. Be that as it may, the right tracings at the menstrual period were always alike, and always different from the left. I may remark, however, that the tension was much the same, the difference depending on the rhythm of the vaso-motor impulse.

Other observations were done with hospital patients, young and middle-age British soldiers. I was cautious not to be misled by superficial or accidental likenesses, for I made it a rule to regard nothing as a typical likeness where the complete pulsation cycle of the second individual did not fall within the forms of the extremes of the first; that is to say the second man was pronounced *like* the first, when some of his cycles were more like those of the first than the extremes of the first were like one another—and that within a very limited period of time; for the closer the coincidence in time, the more likely was the resemblance to be forced. . . . (Purdon 1898:333)

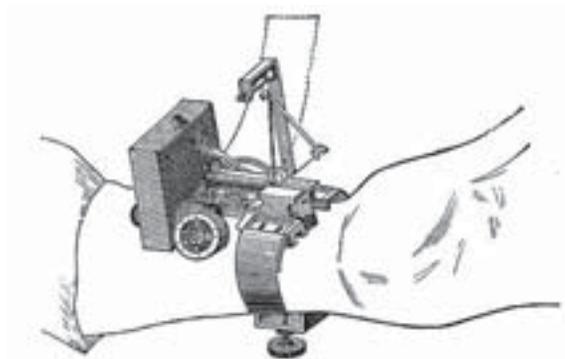


Figure 1. Dudgeon's Sphygmograph (from Dudgeon 1882).

Three men were said to show good results. One suffered from urethritis and the other two from rheumatism. According to Purdon:

Likenesses were observed between the first two named men and also between the second and third; but the most pronounced and truly remarkable resemblances were found to exist when the first-named man influenced the third. (Purdon 1898:335)

Finally, I will present the following observations made by Purdon:

A gunner of the Royal Artillery, very much broken down in health from Gibraltar fever, was in hospital during the latter part of the year, when I had become pretty expert in the practical application of my method of research. This man on occasions showed very remarkable, I do not exaggerate when I say wonderful, resemblances to my right and left radial traces, always, be it observed, taken at the same time. Peculiar tracings of mine that I could have sworn to in a Court of Justice . . . were so closely imitated that, if they were mixed up together, I could not say for certain, which were his and which were mine, and that when his ordinary and undisturbed traces were absolutely different in every respect from mine. I may add that the patient was always better, in fact at his best, when these similarities were most pronounced.

Another man who suffered from what I regarded as a spurious form of angina pectoris . . . at times and when I had been brought into close contact with him for some time, as when I had been sitting on his bed for an hour, showed likenesses to my curves which no impartial witness could ascribe to accident. With varying tensions and with frequent adjustments of the instrument, so as to eliminate chance resemblances as much as possible, all the above men were subjected to observation not once or half

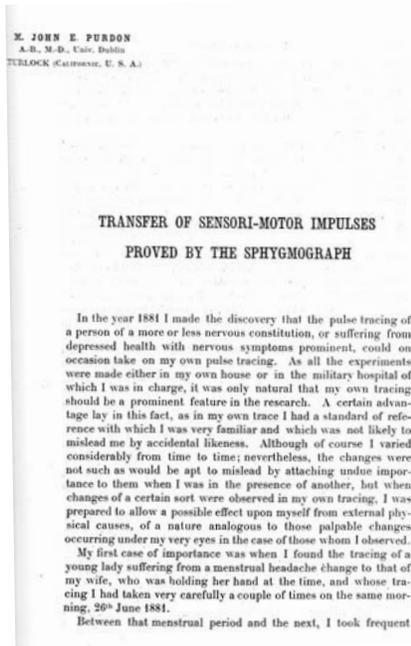


Figure 2. Paper presented by Purdon (1901) at the Fourth International Congress of Psychology in Paris.

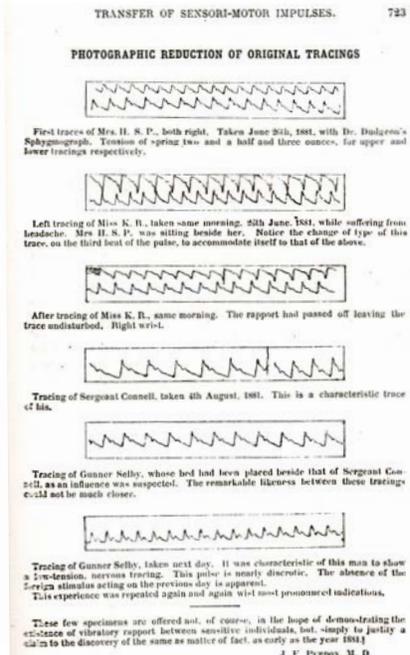


Figure 3. Sphygmographic tracings in a paper presented by Purdon (1901).

a dozen, but many scores of times, out of which many true and reliable likenesses showed themselves in each instance of comparison between the selected couples. I felt, therefore, justified in regarding the discovery as proved. (Purdon 1898:336)

Explaining the Pulse Tracings

Purdon's proposal of a physical transmission to explain his pulse tracings took place in the context of many Nineteenth-Century speculations about brain waves and other physical emanations to account for thought-transference (e.g., Knowles 1869; see also Alvarado 2008) and physical mediumship (e.g., Cox 1872; see also Alvarado 2006).⁹ Furthermore, his use of the concept of ether was consistent with ideas in physics at the end of the Nineteenth Century (Cantor & Hodge 1981, Schaffner 1972), and with its application to the concept of telepathy by some writers, an example being the well-known William Crookes (1899; see also Houston 1892).

For some the ether transcended physics, having metaphysical implica-

tions, as seen in Stewart and Tait's *The Unseen Universe* (Tait 1875; see also Noakes 2005). It was a concept that attracted speculation from spiritualists. For example, in a lecture it was said that "spiritual beings . . . [may] work upon that intermediate ether, and through it . . . influence material objects" (Anonymous 1884:791). The concept was further extended by others when they imagined the existence of a more spiritual ether (e.g., Blavatsky 1877), what Hudson Tuttle called a psychic ether, "the medium through which all spiritual phenomena are produced" (Tuttle 1889:20).

Inspired by the idea of ether of James Clerk Maxwell (1878) and others, Purdon argued that the ether could be seen as the way mental events were propagated. He wrote that the

medium of communication can be nothing else than the ether in special relation with the two nervous systems, which thus function identically through the presence and agency of sympathetic vibrations. (Purdon 1896:110)

Purdon further affirmed that "when one vaso-motor or cerebral center *acts* upon another, it surely does so physically . . ." (Purdon 1898:339).¹⁰

Purdon was led to speculate about an extrasomatic interaction of nerve centers to account for the above-mentioned phenomena, something that was similar in some ways to the ideas of previous theorists regarding nervous and psychic forces, not to mention the mesmeric literature (Alvarado 2006, 2008). He advanced the hypothesis of

a physical disturbance of a rotational character . . . propagated through space from the body of the individual in a state of strain, and that there may thereby be a reasonable analogy to the acknowledged principles of magneto-electric action at a distance, but vastly more complex . . . (Purdon 1882a:28–29)

Regarding the transfer of pulses Purdon wrote:

The medium of communication can be nothing else than the ether in special relation with the two nervous systems, which thus function identically through the presence and agency of sympathetic vibrations. (Purdon 1898:110)

Years later Purdon referred to the psychic rapport he had with his wife. The similarity in their pulses led him to think that they both had a

similar distribution of the blood [that took place] either through the determination of the unconscious self, or through a nervous attraction prelimi-

nary to vital interaction, physical and psychical . . . It would appear as if the common pulse tracing . . . is our lower projection view of a transcendental state of affairs . . . falling outside the limits of our conscious forms of intuition. (Purdon 1902:224)

Here Purdon may have been influenced by the ideas of Frederic W. H. Myers who argued in many of his publications about the importance of the subliminal mind in the manifestation of telepathy (e.g., Myers, 1884, 1885).¹¹

Concluding Remarks

Perhaps it is unfair to comment on Purdon's methodology from the modern point of view. Nonetheless I will make some points that are obvious today but were not so in Purdon's times. By modern standards Purdon's tests are very crude, lacking several methodological precautions considered important today (such as those commented on by Acunzo, Evrard, & Rabeyron [2014]). The evaluation of the results depended on visual inspection of the tracings, something that does not seem to have been done blindly. Furthermore, the reports lack information about checks on the proper functioning of the sphygmograph, potential artifacts related to how the instrument was attached to the arm, the position of the arm and its movements, and environmental stimuli that could have affected the tracings of both subjects. One aspect that was already obvious to some researchers at the time Purdon was working was the need for proper separation between the experimental participants, a problem in some of the tests.

In these current days of "entanglement" and "nonlocality" in which physical transmission models are rejected by many, Purdon's views in which the projection of nervous forces accounted for the mental and physical phenomena of spiritualism and psychical research will appear odd and antiquated to some readers. But both before and during his time there were many such ideas around (Alvarado 2006, 2008),¹² as there are still today in some quarters.

Current ideas of psi as a normal function are different from Purdon's belief that nervous pathology was related to some genuine psychic manifestations. In earlier writings, such as those of physician B. W. Richmond, abnormal nervous constitutions were associated with "real" psychic phenomena (Brittan & Richmond 1853; see also Fairfield 1875, Lombroso 1909, Morselli 1908).

Regardless of how we see Purdon's methodology and theoretical ideas, his work deserves to be remembered if only to credit him for an early empirical attempt to detect ESP functioning via physiological measurements.

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Notes

- ¹ Some examples of pioneering work in this area are the studies of Figar (1959), Dean (1962), Tart (1963), and Duane and Berendt (1965). Modern examples include the work of Grinberg-Zylberbaum, Delaflor, Attie, and Goswami (1994), Radin (2004), Standish, Kozak, Johnson, and Richards (2004), and Tressoldi, Martinelli, Semenzato, and Cappato (2011). Reviews of this line of research have been published by Beloff (1974), Modestino (2013), Mossbridge, Tressoldi, and Utts (2012), and Palmer (1978).
- ² Also of historical interest are various observations that have supported the idea that ESP may manifest via bodily sensations and processes. Charles Lafontaine (1847:87) referred to mesmerized individuals who could feel prickings and other stimuli presented to other people, as well as the pains of the diseased who consulted them. Other examples include early through-transference experiments to induce pain sensations (Guthrie 1885), the few cases reported in *Phantasms of the Living* about veridical impressions seemingly related to pain and feelings of illness (Gurney, Myers, & Podmore 1886), psychics' feeling physical discomfort and pain related to people they were "reading" at a distance (Richet 1888), and physiological effects that supposedly indicated the effect of drugs and medicines at a distance (Bourru & Burot 1887). While none of this is proof that actual physiological processes were active expressing ESP-acquired information, they contributed to the idea of the possibility of expressing such information in physiological ways. On the theoretical side, Myers speculated on the possibility "that the telepathic impact may affect some sensitive internal organs . . ." (Myers 1893:32), including vasomotor processes, and stated that motor messages coming from the subliminal mind started "from modifications of the percipient's general organic condition or coenesthesia . . ." (Myers 1893:40).
- ³ Nicol (1973) made reference to Purdon's work.
- ⁴ This date was obtained from *Find a Grave* <http://www.findagrave.com/>. I believe this refers to our John E. Purdon because of information consistent with Stone (1898:414). This includes his birthdate, birthplace, medical degree, and that he graduated from the University of Dublin.

⁵ Years later someone wrote that Purdon had sent him sphygmographic tracings done with Dudgeon's instrument (Anonymous 1917:18). The device, which was smaller and more portable than previous instruments, was described by Dudgeon (1882; see also Lawrence 1979; see Figure 1). According to Dudgeon he introduced the device in 1880 and it was a small model two and a half by two inches in size and its weight was four ounces. He wrote:

When packed in its leather case it can be easily carried in the pocket. It is adjusted to the wrist, the stud on the free end of the spring being carefully placed upon the radial artery immediately above the styloid process of the radius. The instrument is kept in position by an inelastic strap, which may be secured by a tourniquet or simply held by the fore-finger and thumb of the right hand. . . . The pressure of the spring is regulated by the excentric wheel, to any amount from one up to five ounces. When the needle is seen to play freely over the centre of the tracing-paper, the machinery of the clockwork which drives the paper through the machine is set in motion by pushing toward the right the small metal handle on the top of the clockwork box. . . . The instrument is used with equal facility on either arm, and the patient may either stand, sit, or lie. The levers are so adjusted that the movements of the artery are magnified exactly fifty times. The pressure of the spring may be altered without disturbing the instrument. The smoked portion of the paper passes through the instrument in ten seconds; hence six times the number of beats traced on the paper give the number of beats per minute . . . (Dudgeon 1882:29–31).

⁶ See also mentions of the work in forums open to psychic phenomena such as *The Theosophist* (Anonymous 1882a), *Psychische Studien* (Anonymous 1882b), and *Borderland* (Anonymous 1896).

⁷ In addition to many earlier discussions of the concept that we cannot cover here, the topic was discussed in British medical journals around the time Purdon started writing. A physician stated that “there is a basic arthritic habit of body, or diathesis, and that from this issue at least two branches, the gouty and the rheumatic stocks” (Duckworth 1883:194). Another physician referred to arthritic diathesis as a constitutional predisposition to arthritic symptoms that could include such varied things as dyspepsia, renal disease, pneumonia, and skin problems (Hutchinson 1881). Lemoine (1891) reviewed the topic and stated that arthritism generates the nervous diathesis but that “the arthritic is not a neuropath yet, but it is on the brink of becoming one and his children frequently are” (Lemoine 1891:124, my translation).

⁸ As interesting as the apparitional and physical phenomena were, my focus here is on Purdon's writings about his use of the sphygmograph. But it should be pointed out that Purdon (1882a:27) believed the raps

were related to muscular rheumatism and to chorea.

- ⁹ Purdon stated: “My sphygmograph studies were first undertaken in the hope of finding some physiological explanation of the Beattie photographs of thirty years ago” (Purdon 1902:225). This was a reference to photographer John Beattie, who reported obtaining a variety of amorphous luminous forms on photographic plates in the early 1870s (one of Beattie’s early reports was transcribed by Houghton 1882:43–48). It is not clear how the sphygmograph would have helped in elucidation of these phenomena, but perhaps Purdon saw the instrument as the means to detect unknown forces presumably seen in Beattie’s photographs (on this see the ideas of force held by Beattie 1873). Perhaps he made a connection between pulses and invisible forces when he stated that his first exploration was finding a disturbance in the pulse of a sister of medium Florence Cook “on the approach of an apparition visible to herself alone” (Purdon 1902:225).
- ¹⁰ Referring to physical effects at a distance Purdon wrote later that such effects “can be accounted for in psychics as well as in physics by the assumption of a plenum whose elemental constituents obey laws identical with those which enable the ether to transmit energy” (Purdon 1902:225).
- ¹¹ Myers (1892:328) wrote:
- We have . . . dwelt on the knowledge which reaches us otherwise than through the recognised organs of sense. And it is, I hold, in the subliminal region that such phenomena are initiated, and that such knowledge is primarily gained.
- ¹² Many of the British researchers associated with the Society for Psychical Research, however, did not follow physicalistic approaches (e.g., Gurney, Myers, & Podmore 1886).

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