

**Rosettes, engrailed edges, and star-shaped patterns:
vibrating liquid drops floating over hot surfaces**

Manuscript Review for [REDACTED]

Thank you for giving me the chance to review [REDACTED] for possible inclusion in [REDACTED]. I really enjoyed reading the article – studying it, actually – and following the circuitous and surprisingly disconnected history of the vibration patters seen in the Leidenfrost effect. As the author notes, it does make “for a compelling story.” Indeed, the story is interesting enough that the “narrative arc” carries the paper, and I believe the editors of [REDACTED] could consider publishing the paper as it is. Its strength, in addition to conveying a compelling story in a readable manner, includes the amount of research that has been required to find all the past and disconnected work, an obvious familiarity with the science involved, and the ability to connect that past work to clearly demonstrate the periods of interest and forgetfulness.

I have two issues with the paper, which I hope the author will consider. First, I could not always follow the organization of the paper. It jumps backward and forward through time. Upon a second or third reading, it becomes clearer. The author often begins with a scientist and then traces the controversy surrounding the “rediscovery” or the lineage leading to renewed interest. I outlined the paragraphs according to dates and the result was dizzying.

Second, I think that something added to the narrative arc – an idea arc – would make this paper much stronger. The argument of the paper can be summarized with this sentence: “The sudden and often quite unexpected appearance of highly symmetrical forms within moderately sized Leidenfrost drops led on more than one occasion many into believing the enchanting figures they saw were something new and previously unknown to science.” By going through the many different scientists in the past who “rediscovered” these figures, the author notes that this “puzzling” loss of previous work gives the history of science an important role. “By casting light upon one small but currently important aspect of film boiling it is able to recognise past achievements made and record and preserve past gains attained – achievements and gains that would otherwise remain unknown to the modern reader.” Again, in and of itself, this makes for an interesting story. But, it is not the type of history of science that the discipline now recognizes as its most important role.

Uncovering past achievements is interesting. But it is the lessons to be learned from these that is important. Good history of science does not simply record past achievements; the point is to bring out the meaning. What does the process of “revival” and “renewal” teach us about history and/or science? It is interesting that past achievements were overlooked even though they had been published in major scientific journals, but it is still not significant. The historian’s job is to pull out the significance.

Unfortunately, I’m not sure what the significance is. Usually, one would turn to larger social and cultural forces to tease out these larger questions. Here is a rough example. The author introduces Tyndall at the beginning of the “Rediscovery and controversy” section, noting his demonstrations and inclusion of rosettes in his *Heat as a Mode of Motion*. After moving forward to Garnett’s work, to show the (negative) influence of Tyndall, the author moves backward to the

work of Schnauss, Emsmann, Kerkhoff, and others. Much of this latter work had been published in the *Annalen* in 1850-51. In those years, Tyndall was living in Germany, working for William Francis (of the Taylor and Francis publishing firm) as a translator for the *Phil. Mag.*, and going through each volume of the *Annalen* extremely closely. Tyndall would have seen these discussions, and perhaps then performed some of the experiments in his laboratory. This is, in fact, how Tyndall originally made his career: by translating German articles into English, reproducing the experiments, and then publishing his own work in the *Phil. Mag.*

First, note that the organization is rather tricky. It begins with Tyndall, moves forward, then backward, with the section ending with two accounts (Saussure and de Luc) from the eighteenth century. Second, is there a lesson here about the process of translation between German and English periodicals, and the role of people like Tyndall and Francis and others who were actively searching out the latest science and making their name through translation? The boom in interest in the Leidenfrost drops from 1850 to the 1870s could have rotated around just such processes of communication and translation.

In the end, the conclusion of this paper leaves me a bit unsatisfied, wanting more. But, perhaps that is what a good conclusion should do. I suggest the editors push the author to think critically about the organization and the conclusion, asking the author to tease out a bit more the significance of the periods of revival and forgetfulness. If the author just doesn't know – perhaps interest just waned and too much time had elapsed, as the author suggests – then publish the article anyway.