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Obituary: Peter Kelterborn (4 July 1928 – 9 March 2017)

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On 9 March 2017, Peter Kelterborn, Swiss civil engineer and experimental archaeologist closed his eyes for good at the age of 89. He was known to many of his colleagues through his well-researched works on prehistorical flint and rock technology, but also from his methodological scientific experiments in archaeology. Many cherished him as a modest and thoughtful colleague, friend and counsellor.

> The time in Lejre was a real stroke of luck for Peter. It was incredibly inspiring as here he met many kindred spirits, such as the young European talents Jacques Pelegrin and Bo Madsen, the American Errett Callahan and numerous other great flint knappers from Europe and the rest of the world, who he came to appreciate as faithful friends and companions. Many summer camps followed and while the most talented flint knappers from around the globe honed their practical skills, Peter always remained in the back.

Born in Lenzburg in Canton Aargau on 4 July 1928 as the son of a Swiss natural oil geologist, Peter Kelterborn, spent the first three years of his life in Romania where his father was prospecting for oil. From here, the family moved to Scheveningen in the Netherlands where his father found work at the headquarters of Shell in The Hague. Peter spent almost his entire youth in the Netherlands, he learned to speak Dutch fluently and without accent and felt so much at home here that for the rest of his life he felt equally Swiss and Dutch. In May 1940, he experienced first-hand the occupation of his host country by the German Wehrmacht. During the war years, which influenced him in many different ways, Peter developed a deep passion for flying and technology, as he fostered an interest in the fighter planes in the sky. When the occupier closed Peter's school and, at the same time, it became increasingly more difficult to find insulin for Peter's diabetic father, the family fled home to Switzerland. In Basel, he attended a Grammar School from which he graduated after the end of the Second World War.

After completing his compulsory military service, Peter went to study civil engineering at the Eidgenössich-Technische Hochschule (ETH) in Zurich. He graduated during the pioneering days of prestressed and prefabricated concrete and became an enthusiastic builder of bridges. He was able to participate in important construction projects in Europe, Egypt, the United States, and in Mexico.
Back in Switzerland, he was also involved in constructing tunnels and dams. Later, he was also very active in the field of developing high quality construction materials.

As early as his university years, Peter became fascinated with the monumental buildings of the Ancient World. He was not so much inclined towards the artistic history, but rather more by the technical constructional aspects of these structures. This fascination for the enormous know-how of ancient builders remained with him throughout his life.
Peter's passion for sport diving also dates back to his student days in Zurich. It was a fortunate coincidence that he was able to combine his interests in old cultures and diving by becoming a member of the "Turi Sub" diving club/group which was founded in 1963. This private diving club, dominated around the young Zurich archaeology student Ulrich Ruoff, basically "rediscovered" the lake dwellings of Lake Zurich. This unexpectedly rich discovery attracted much attention in a short period of time. It is therefore not misleading to call the

pioneering activities of “Turi Sub” as the start of modern diving archaeology in Central Europe. After his encounter with Swiss archaeology, Peter was increasingly fascinated by the high technological level of our ancestors and spent more and more time on issues concerning the stone craft of our Neolithic ancestors.

During one of his many business trips to the United States, Peter seized the opportunity to visit the legendary flint knapper Don E. Crabtree (1912-1980) in his home in Idaho. It was Crabtree himself who introduced Peter to flintknapping. In the years to come, many more visits took place. It was here that Peter also met Crabtree’s students; Jeff Flenniken, Gene Titmus, and J.B. Sollberger, who were to become close friends for life. These contacts with the American/US flint knapper scene were of immense influence on Peter’s subsequent works.

In the 1970s a diving friend informed him of the so-called “Livres de Beurre” from Le Grand Pressigny (Indre-et-Loire, France), and Peter started to take a close look at these gigantic Neolithic cores. His article on “Zur Frage des Livre de Beurre” was published in 1980 and gained much praise from the scientific community throughout Europe, and as a result, Peter was invited to several international congresses which lead to new, important acquaintances from the field of archaeology. His participation in a major flint symposium, which took place in October 1980 in the Mining Museum in Bochum, proved to be crucial for his later work. It was here that Peter learned about the annual experiments on prehistoric stone technology in Lejre (Denmark), and was invited to attend the next meeting by Jürgen Weiner.

The time in Lejre was a real stroke of luck for Peter. It was incredibly inspiring as here he met many kindred spirits, such as the young European talents Jacques Pelegrin and Bo Madsen, the American Errett Callahan and numerous other great flint knappers from Europe and the rest of the world, who he came to appreciate as faithful friends and companions. Many summer camps followed and while the most talented flint knappers from around the globe honed their practical skills, Peter always remained in the back. Although Peter considered his own skills greatly inferior to that of his friends, he was able to give significant impulses/input for carrying out the scientific experiments with/through the methodological strictness and precision of a weathered engineer. This gained him great respect on all sides. All his life, Peter was linked in deep friendship with many participants of the legendary Lejre experiments.

Those familiar with the geology of Switzerland will know that Peter’s home country was never rich in flint materials. Therefore, studying materials had to be brought in from afar. For Peter, this turned into a logistical problem. Out of necessity, he started to look into pressure flaking, saving on effort and materials. He soon started to experiment with raw glass, even porcelain tiles from the DIY were always welcome, and cheap practice pieces for his manifold tests.

The true milestone in Peter’s life was to be the evaluation of the pre-dynastic “Gerzean Knives”. None other than the legendary “Dean of American Flintknapping”, Don E. Crabtree, had also drawn his attention to these highly artistic Egyptian flint knives. Decorated with

regular pressure retouches, these knives immediately captivated Peter, and with great enthusiasm he started to study in great detail original finds in famous collections in Europe, in order to be able to reconstruct the production process. Years of intensive and persistent research activities and countless experiments followed. Finally, Peter succeeded in creating the exact reconstruction of these exceptional testimonies to pre-historic craft and he captured his findings in a publication which brought him international fame. Peter Kelterborn's work on the “Gerzean Knives” is still today a textbook example of an exemplarily conducted archaeological experiment; described thoroughly with great attention to detail and carried out in the most exemplary manner.

The “Gerzean Knives” were followed by decades of studies about Meso-American pressure flaked blades. They were the logical outcome of the pressure flaking experiments which started with Peter's studies on the “Gerzean Knives”. However, the spectrum of questions started to change, not only aiming at reconstructing the production process of these remarkable pressure flaked blades, but also taking a closer look at the laws of the breaking process of glass-like materials.

With this fundamental issue in perspective, which sooner or later captivates anyone who becomes intensively involved with pre-historic flint artefacts, Peter 's attention now focused on one of the most difficult and yet most fascinating research areas of flint archaeology. After decades of studying the matter at hand, he knew very well that it would be an arduous journey and that only methodological strictness and persistent thoroughness in conducting standardized experiments would lead to the goal. At the same time, it was obvious that in conventional knapping experiments too many arbitrary parameters played a role in deducing laws governing the breaking process. This is when Peter had the idea to have some sort of “machine” emulating the movements of the flint worker. This machine was to imitate the movements as accurately as possible, and at the same time reduce the variability of the numerous individual parameter (body posture, tool handling, tool characteristics etc.) to an absolute minimum. As required for a serious experiment, it should thus be possible to vary individual parameters in order to work out their impact on the breaking process. The advantage of this method was that each step in the process could be measured and replicated, thus providing a level of detail which until then no known experiment in the field of flint technology had ever achieved.

Based on this concept, Peter developed his double-lever machine, founding the new discipline of “measurable flintknapping”, as he himself called his new research method. Years of very intensive work and countless experiments, all of which were documented in great detail, lead to remarkable results; the immense significance of which probably only a very small group of contemporary researchers are aware of.
This lack of awareness may be due to the complexity and the information density of Peter's works, consisting of texts that are hard to digest and require a lot of theoretical knowledge.

This means that the remarkable results are only accessible to absolute experts in the matter. Not many experimental archaeologists have recognised the ingenuity of “measurable flintknapping”; a few have considered Peter's machine a simple tool for mass production of blades without really understanding its true purpose.

Apart from his research, another key interest of his was to improve Experimental Archaeology among a broader circle of people and to better anchor within the archaeological discipline. For this reason, he was active in various associations and publicity creating events, such as the major open air exhibition “Pfahlbauland” in Zürich (28 April to 30 September, 1990). Together with Walter Fasnacht and Irmgard Bauer he founded Arbeitsgemeinschaft für die Experimentelle Archäologie (AEAS) (Working Group for Experimental Archaeology) in Switzerland which today is called Experimentelle Archäologie Schweiz (EAS) (Experimental Archaeology Switzerland). Peter also conducted various courses in flint knapping for students attending the Bern and Zürich universities. Throughout his life, it was of utmost importance to Peter to show archaeologists and students that Experimental Archaeology is not intuitive playing with original materials/tools but rather hard, target-oriented work, which has to be carried out according to scientific standards. With his methodological articles on how to conduct serious experiments he was able to have a positive influence in both Switzerland and internationally. Peter's large international network in Experimental Archaeology was most remarkable and he had friends and acquaintances in almost all parts of world who shared his passion.

I remember very well how, as a young archaeologist, I approached Peter and asked him to introduce me to the art of flint knapping. He did not agree right away, but interrogated me for the best hour on why I wanted to learn this old craft. At the end, he dryly remarked that his time was very valuable and that he only would invest time if I showed true scientific interest in working flint. It seems like I made an impression on him, as he actually took it upon himself to teach me the basics of working flint. For this I still am very grateful to him. He was an incredibly talented teacher, who not only provided his students with facts and knowledge, but also stimulated them to think and even more important, to observe carefully!

There is one other memory which I remember really well; we were watching a video on flint knapping and he asked me to describe what I saw. I did and he simply remarked “Don't focus on the hand moving the tool but watch the other hand. It is much more interesting”. This remark taught me to observe more closely and to also pay attention to things one might at first not consider as a crucial observation. Peter was an incredibly good observer who had long ago learned that the seemingly “passive” hand in flint knapping, the one holding the core, has a major influence on success or failure of the knapping process. You could learn a lot from Peter in different aspects of life, and his calm and collected manner set the perfect frame for benefiting from his manifold knowledge.

Peter has left us a rich scientific legacy in his numerous works, including “Measurable Flint Knapping” which will long be remembered. Peter Kelterborn’s stubbornness in his methodological consistency and accuracy is only one aspect of his characteristics, he was also a wonderful and unique person. His largesse to let others share in his broad knowledge made him an exemplary researcher, a faithful companion and also a great friend whom none of us will ever forget.

Keywords experimental archaeology
flint knapping
methodology
theory
stone
history

Country Switzerland

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Gallery Image

FIG 1. PICTURE OF PETER FROM MAY 2012. HE HOLDS A PICTURE OF A ‘LIVRE-DE-BEURRE-CORE’ FROM THE BEGINNING OF THE 3 MILLENNIUM BC. PHOTO: KURT ALTORFER.

FIG 2. EXCURSION TO STEVNS KLINT (DK) ON 3RD AUGUST 1981 AS PART OF THE FLINTKNAPPER-WORKSHOP IN LEJRE. FROM LEFT TO RIGHT: ERRETT CALLAHAN (USA), BO MADSEN (DK), PETER KELTERBORN (CH), JACQUES PELEGRIN (F), IVAN ANDERSEN (DK). PHOTO: JÜRGEN WEINER.

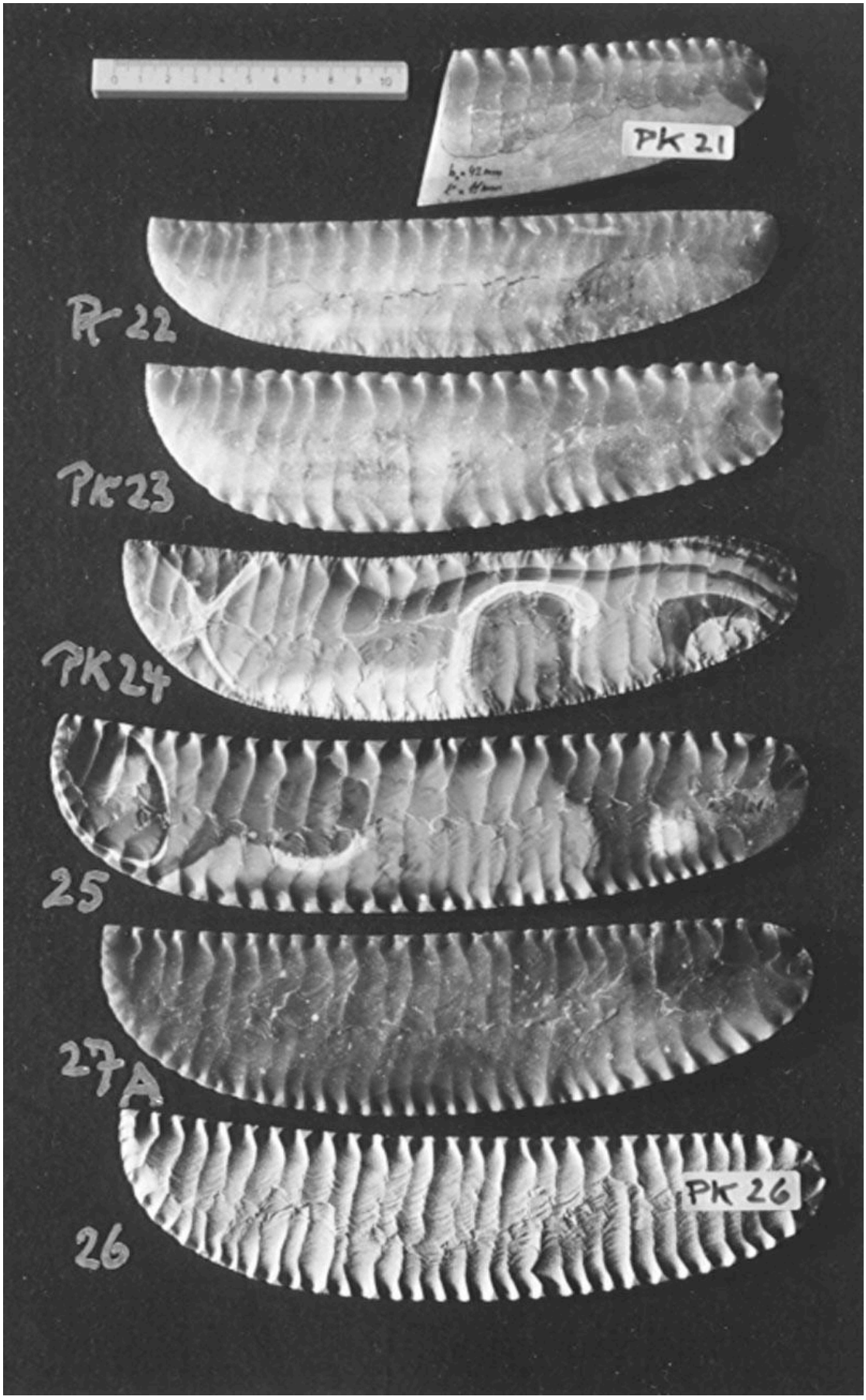

FIG 3. A COLLECTION OF ‘GERZEAN KNIVES’ PRODUCED IN THE EXPERIMENTS OF PETER KELTERBORN. PHOTO: PETER KELTERBORN.

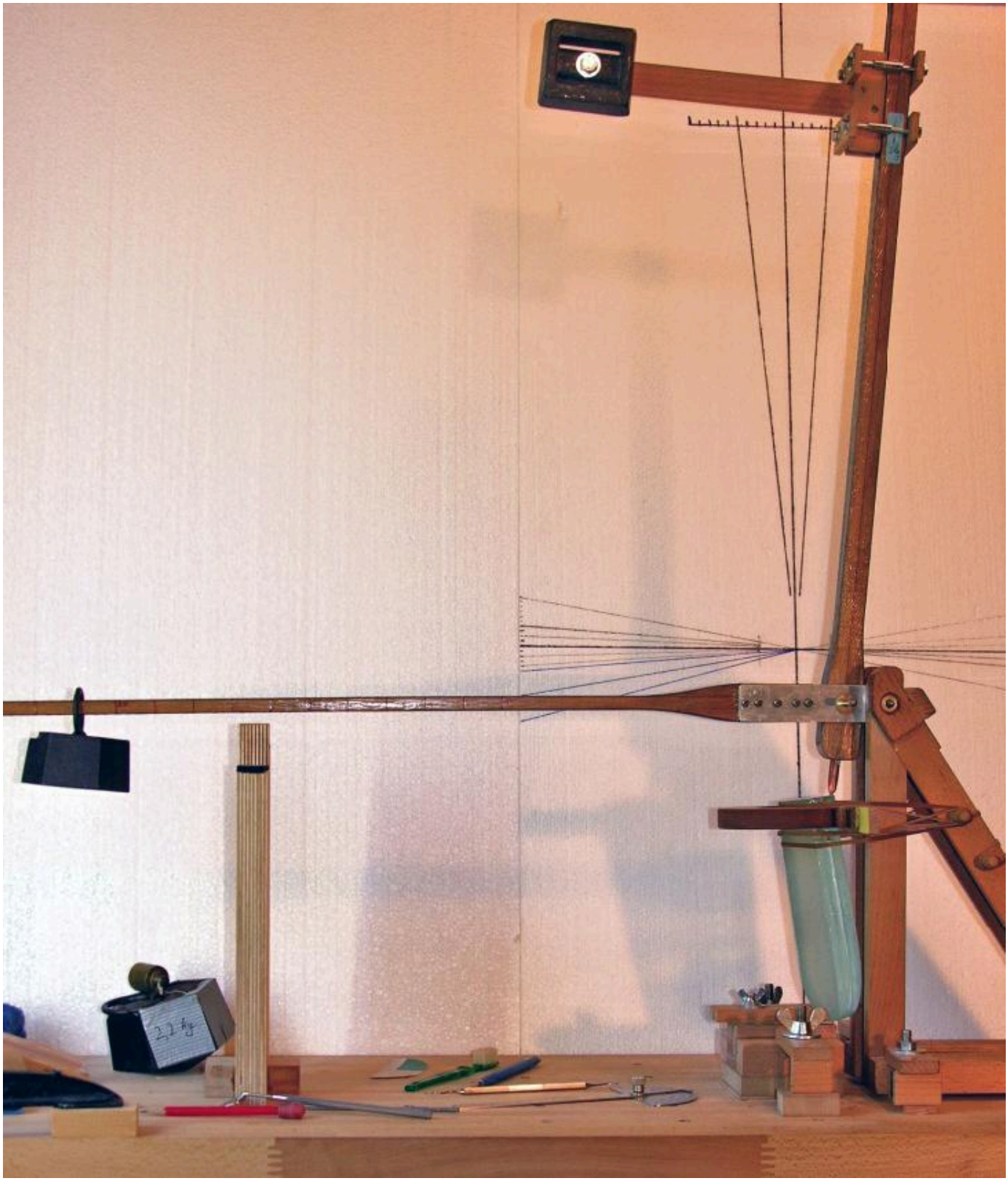

FIG 4. PETER'S 'DOUBLE LEVER MACHINE' TO REPLICATE LONG MESO-AMERICAN OBSIDIAN PRESSURE BLADES. BOTTOM RIGHT, A PRESSURE-BLADE-CORE MADE FROM GLASS IS MOUNTED FOR TESTING PURPOSES. PHOTO: PETER KELTERBORN.