FULCRUM

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Fulcrum is a newsletter for people interested in the history of weighing and measuring. It is published in February, May, August and November. Contributions are always welcome and can be sent to editor, John Knights

The Nuclear Option

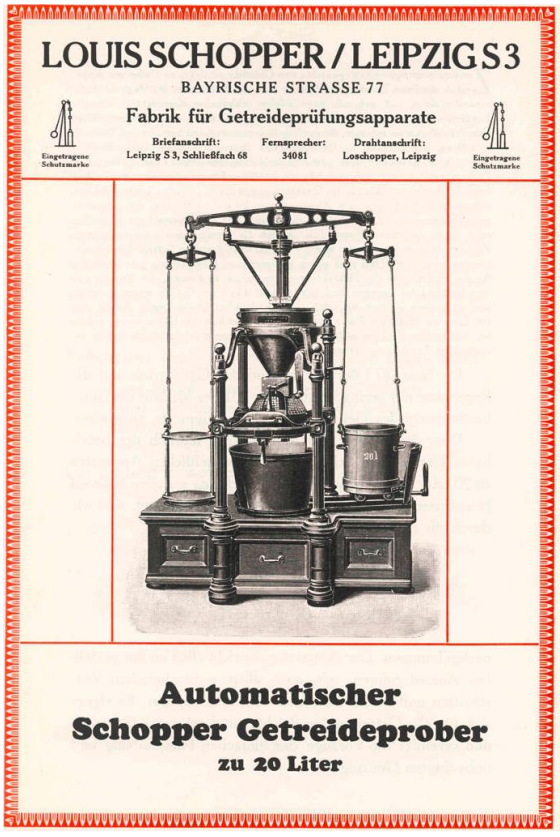
2025 sees the 80th anniversary of the nuclear attacks on Japan in World War 2.There will always be debate about the justice of, and motives for these attacks at the end of the conflict and arguments can be made both for and against. There have been a number of TV programmes about the development of the weapons and their ultimate use on Japanese cities and one can only marvel at the resources thrown at the project. There was clearly a real fear that the Nazis were close to developing their own bomb which would be used against the allies. Fortunately most of the best brains were working against the Axis.

We know about the site at Los Alamos, in the desert of New Mexico where the bombs were developed, built and tested. There were two other sites in the USA however where fissionable material was manufactured and sent to New Mexico. Uranium was enriched at Oak Ridge in Tennessee, where an entire town was constructed to support the facility. Plutonium, as used in the Nagasaki bomb was produced at Hanford in Washington State where an

existing village was destroyed so the new facility could be constructed. One of the programmes commented on the fact that all these places, despite their dark purpose, were in many ways, normal sorts of towns with normal activities going on. A fascinating photograph was shown of a grocery shop in Oak Ridge and lo and behold there is an inspector of weights and measures performing an eccentric test on the rather splendid grocery scale whilst a somewhat quizzical shopkeeper looks on. They may have been making a weapon of unparalleled destructive capability but those corners were going to have to be correct.

King Chondrometer

Things have been a bit quiet of late on the metrological correspondence front. People I know have been jetting off to exotic locations and not sending me any good metrology material. What do these people do on their holidays?
I was pleased therefore when one friend suddenly sent me details of a spectacular item that she had located in Lincolnshire, not more than 30 miles away from where I live, residing in a large antique centre. She said she wasn't quite sure what it was but thought I would be interested. When I looked at the pictures I knew exactly what it was, although I'd only ever seen diagrams and descriptions.



To the right we see a leaflet for a 'Getreideprober' or Grain Tester, made by the firm of Louis Schopper (*whom God preserve*) of Leipzig and it was an actual one of these that rather miraculously appeared in the antique centre. It can be guessed from the image that this is no small item and when I visited to see for myself the impression was confirmed. It was bloody enormous! I asked the man at the desk how it came to be there, but he didn't know. He said he just arrived one morning and there it was. I was allowed to have a good poke around the machine without any interference and I started to get some idea of its method of operation. We are all familiar with the concept of the Chondrometer, a bucket attached to a weighing device which permits a known volume of grain to be weighed so that the density of the product can be ascertained. In Britain this value was referred to as 'Bushel Weight' and in Metric countries as Hectolitre Weight. This figure is an indication of grain quality and is an important factor in deciding a consignment's value. Chondrometers were, and indeed still are a vital piece of equipment for every business dealing in grain.

In Britain there is little or no regulation of chondrometers and merchants are free to use any piece of equipment that they want. In Germany it seemed to be different and these items were subject to the same legal strictures as other trade devices. This item was clearly not one you would have found down on the farm but rather on the premises of a major grain importer/exporter where extreme accuracy was essential.

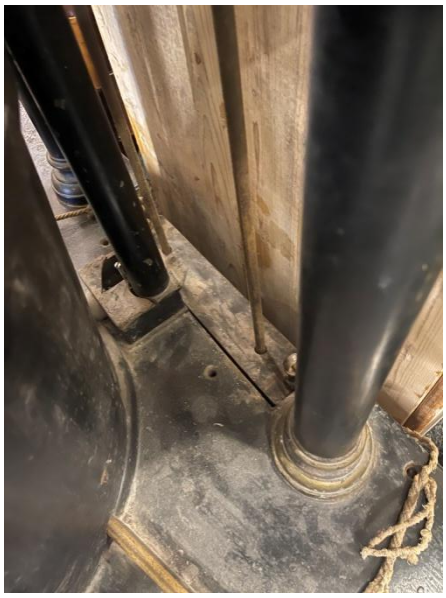
The normal piece of equipment would measure a pint or a litre of the product and produce a fairly approximate value for the density. The Schopper machine is of a different order of magnitude and accuracy. Not only does it base the result on a 20 litre sample of grain but the method of levelling or 'striking' the measure to ensure a precise quantity, is extremely efficient and does not rely on the whim of the operator. The machine is described as 'Automatischer' or automatic, which is really not correct as most of the operations are done manually. The one procedure where the operator plays no part is the striking of the measure which was perhaps the justification for the claim.

At the start of the cycle the measure sits to the side of the main part of the machine on a trolley which in turn, sits on a set of rails (see left). The trolley, with the measure is then slid under the central hopper and an accompanying curved section closes the iron wall surrounding it. The hopper above the measure is filled with the sample of grain which is held in place by a flap valve at the base of the lower funnel. The striking plate, below the funnel is then pulled back and is locked in place by an iron latch at the front of

the assembly (see left). This action also allows the flap to open and the grain drops into the measure and overfills it leaving it in a 'heaped' condition (a cone with a base angle of some 36° if you're interested.)

The assembly, containing the V shaped striking plate runs on another set of rails and is held by the latch arrangement. Two cords (sadly missing from the item on display) are attached to the striking mechanism. These pass over two pulley wheels at the rear of the machine and are connected to a heavy iron block which is free to move up and down, sliding on two metal rods which pass through the block. When the striking plate is pulled back the iron block is lifted and the plate is thus under tension, held only by the latch.

The operator then lifts the latch and the striking plate assembly is pulled backwards on its rails. As the iron block falls, the thin striking plate passes through the extremely narrow gap between the base of the hopper and the top of the measure and removes the excess grain from the measured quantity. This leaves a precise 20 litres in the measure. This operation also closes the flap valve leaving the machine ready for the next test.



The 'automatic' nature of the 'strike' means that the forces acting are always the same so the amount of compaction within the measure will not vary, as could be the case where the operator was doing it with a manual striking rod or was pushing the striking plate across the measure by hand.

Once the measure has been levelled it is pulled out from beneath the central funnel to its original position. Here it can be connected to the chains of the overhead beamscale by means of two lugs on the sides of the cylinder. The empty measure is pre-tared off by weights on the other pan and the beam is raised into the weighing position by a handle on the front of the machine. Weights are added to the pan until equilibrium is

achieved and the weight of the sample is ascertained. The measure can then be lifted off the scale, emptied and replaced on the trolley, ready for the next cycle.

The machine is extremely heavy and solid, being made largely of cast iron with brass fittings. It is mounted on a wooden base which is fitted with drawers to hold the weights etc and I assume the centre one is where the overflow grain collects after striking (couldn't get it open!). There are screw feet at the bottom of the base and a plumb line so that the whole machine can be accurately levelled, an essential prerequisite for proper operation.

The 20 Litre measure appears to be made of aluminium alloy and is again of substantial construction. It is marked with a number 31, which identifies it with the machine which has the same number marked on the hopper. The measure carries verification marks as does the hopper where there is a lead seal marked with a verification stamp on one side and a number 13 on the other, suggesting a verification date of 1913.

Having had a good look at this incredible instrument, I contacted Thomas Allgeier a fellow enthusiast who is German, to see if he knew anymore about it. He confirmed much of what I had deduced but then said he was in contact with his friend Claus, yet another German enthusiast

who happened to be in the UK at the time and who was very keen to have a look at this 'thing'. The 'thing', as stated was in Lincolnshire and Claus, at that moment, was in Wales. For the benefit of foreign readers, these places are not very near to each other. Claus then contacted me and said he was immediately heading out to find the Antique Centre, to which I gave directions. I also pointed out that the building in question closed at 3.00pm so he'd better hurry up. In the event I went over to the Centre and met him there when he arrived, about 40 minutes before the place was due to close. It proved to be sufficient time for another good poke about the machine and we even discovered a few more of its secrets. They did pretty much have to throw us out when they wanted to close and we were still busy crawling all over the machine. We kidnapped a passing young woman and persuaded her to take the photo of 'two silly old

buggers in front of a mad machine' purely to give an idea of the scale of the apparatus you understand.

Old Cobblers

Back in Edition 67 we looked at the innovative, but ultimately impracticable design for a petrol station, by celebrity architect Frank Lloyd Wright. As fuel retailing became main stream more sensible attempts were made to make the premises stylish and pleasing to the eye. This was particularly the case in the 1930's when both petrol pumps and the service stations went full Art Deco. The fabulous 'Deco' pumps are long gone but the buildings often remain although probably now repurposed, as small scale petrol retailers disappear.

The late 1960's saw the appearance of the forcourt canopy which was a direct result of petrol sites becoming 'self service' and the hapless motorist, forced into the great outdoors, had to be protected by the rain. The canopy often went with a new, larger site with a layout specifically designed for self service, although sometimes an existing site could be adapted and a canopy shoehorned in. Unfortunately these developments saw the death of any pretention to good taste. The buildings and the equipment became utilitarian and visually boring. This set the agenda for the future. Most service stations built since then have followed the same pattern although they are now bigger and usually sited outside towns.

A lot of the older sites have now gone as the corporate giants take over the business and these are usually instantly cleared and built on. Occasionally however, the old site is left for some while and then a curious transmogrification sometimes occurs.

As with the City of Venice, the inherent decay becomes a source of interest or even beauty. I noticed this when I came across some pictures of an old petrol station near the village of East Kirkby in mid Lincolnshire.

The village is known as the home of one of the few surviving Lancaster Bombers from WW2. It is in private hands and although not yet fit to fly, does do a bit of taxiing on the old airfield, now converted to a wartime aviation heritage centre, by the farmers who own the airfield and the aeroplane.

Just outside the village however is 'Cobblers Corner' (no apostrophe apparently) which is the site of the now derelict petrol station. It appears to have been a fuel site built in the 1950's and developed into a self service facility in the 1970's.

At this time it acquired its canopy, a rather spectacular monopodal structure which appears to tempt, if not dare gravity to do its worse, but which has nonetheless survived storm and tempest for some 50 years.

The 1950's buildings are whitewashed but through time the orange brick work is showing through and the walls have begun to crumble.

This site has acquired a bit of an on line reputation as an 'apocalyptic' icon and an example of how nature, when let loose on the puny works of man, can soon begin to reclaim the land and superimpose its own spectacle.

If you are familiar with the filmic works of Andrei Tarkovsky (and who isn't?) you may have come across the 1979 film 'Stalker'. Praised as a masterpiece, it is placed in the category of 'science fiction' but it 'aint no Star Wars! It has a running time of 2 hours but it can seem much much longer. It is on the face of it, arse achingly tedious and the strange thing is this was entirely intentional. Andrei Tarkovsky actually said if he could have made it any more boring he would have done.

The action (and I use the word incorrectly) takes place in a desolate wasteland occupied by derelict buildings and structures, through which a motley bunch of characters wander interminably. I'm probably not selling this film but I have to admit the on-line photos of Cobblers Corner, are reminiscent of the utter desolation portrayed in the film.

The last photos I have seen were taken some 5 years ago so it may be that things have happened to the site since then. Anywhere that can be built on rarely remains empty for long these days. It's only an hour's drive away from where I live so I really should go and have a look for myself.