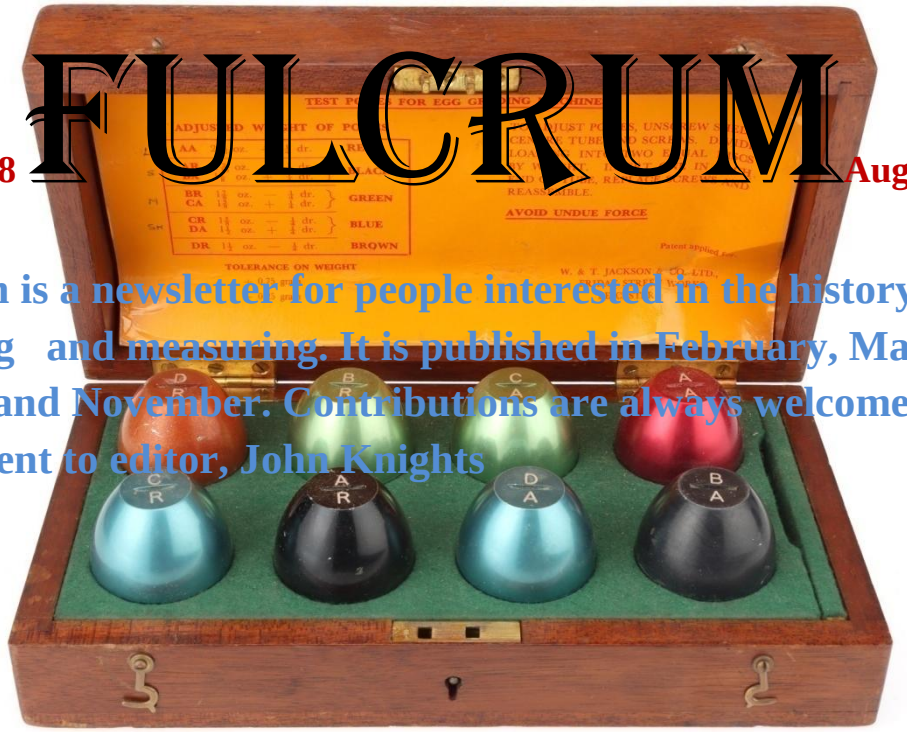
FULCRUM

Edition 68 **August 2025**



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 Van Eater

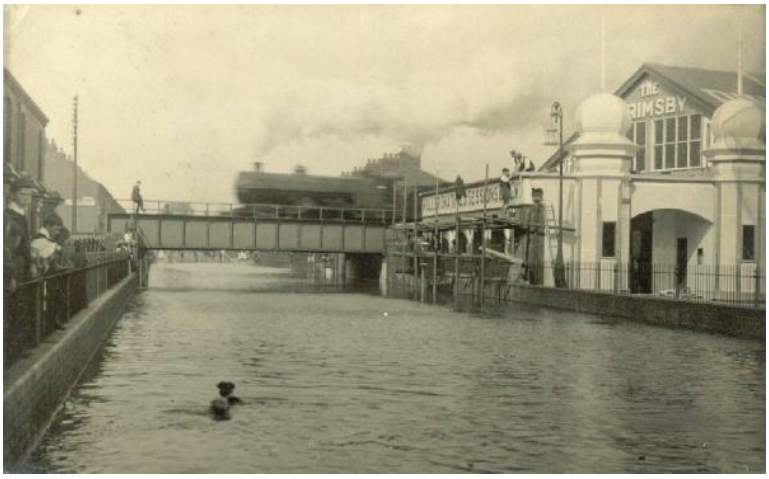
To the world in general the town of Grimsby has little to recommend it. True, it was once the biggest fishing port in the world but this all ended in the 1970's when the Icelandic fishing grounds were lost after the so called Cod Wars. It still handles a good proportion of the nation's fish but this now arrives in road containers rather than on trawlers. The old fish docks and the accompanying infrastructure are now a sad site although new industries, such as off-shore wind power generation occupy some of the old commercial docks.

The town is much changed from its halcyon days and is considered by some to be 'a bit of a dump'. Having said that, back in 2016 a comedy film was made called 'Grimsby' which aimed to portray the town as derelict and the inhabitants as dim witted. It appears however that when the town was visited by the film makers it was decided that the place was not quite shitty enough for their purposes so they actually decamped to Tilbury in Essex, which is presumably shittier. Tilbury therefore became Grimsby for the duration of the filming. This is slightly ironic as the derelict parts of the Dock Estate, in Grimsby have now found a new use as film sets where the dingy narrow alleys can transform into murky Victorian

Whitechapel etc for filmic ripping and the like.

Grimsby does possess two outstanding structures. Firstly there is the Italianate Dock Tower, built in 1852 as a hydraulic accumulator to operate the lock gates in the dock. The other is the Wintringham Road Bridge!

The bridge originally carried the East Coast railway line that sent rail traffic all the way to Kings Cross in London no less. This line was sadly closed in 1970 and the bridge now carries the A16, or Peaks Parkway as it is known in the town.



Wintringham Road, probably in the 1950's! The road is seen to be flooded. It used to flood so often it was known as the Wintringham Lido. The building on the right is the Gaiety Ballroom, later Tiffany's Night Club and then a Mecca Bingo Hall. The building burned down in 1988. A steam train can be seen passing over the bridge on its way to London

We have previously featured incidences of tall goods' vehicles, taking inappropriate routes through historic towns and knocking lumps off historic artefacts such as the old cart steelyard in Woodbridge.

The Wintringham Road Bridge is the ultimate challenge regarding the endangerment of tall vehicles, or even not very tall vehicles. It has a stated clearance of 2.4 metres or 7' 9", and is renowned as probably one of the most dangerous bridges in the country. The bridge clearance is about the height of a Ford Transit and many a Transit van and other makes of van have come to grief trying to pass beneath it. As an old Victorian railway structure it is built like a brick outhouse and seems to suffer very little damage from these collisions. Wintringham Road on the other hand is frequently strewn with the upper portions of various camionettes whose drivers have failed to correctly assess the lack of headroom.

Oddities

Of all the weighing implements ever produced the simplest must be the weighing ladle or spoon. They come in three basic types.

One consists of a cup mounted on the end of a lever, typically about twelve inches long, a movable pivot block with a rounded base fits on the lever which is calibrated in ounces and /or grams. A small

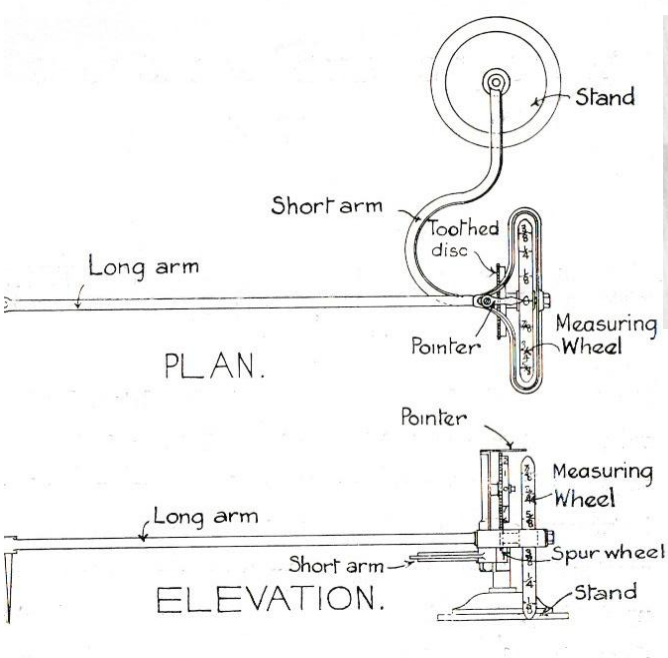
counterweight is fitted to the opposite end of the cup. In use the cup is filled with, say flour, and the lever is slid through the block which rests on a surface until equilibrium is achieved. The weight can then read off, on the scale. Alternatively the weight can be set first and the cup filled until even balance is achieved. Some devices of this type were marketed under the name Gourmet.

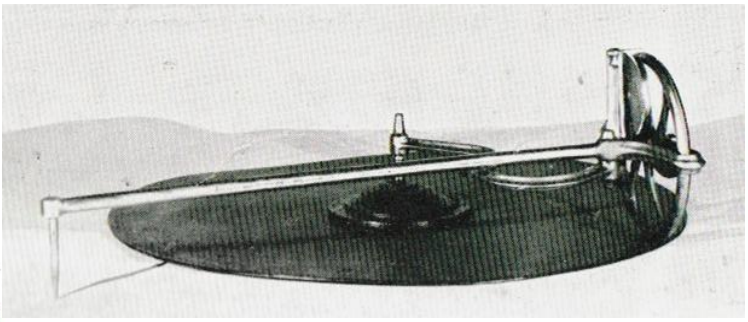
The second type is similar but instead of a rigid lever it is hinged in the centre and held level by a spring. To weigh something, the lever is held in the hand by the end opposite the cup. When the cup is filled, the cup end bends downward and the weight can be read off a scale. Some have a simple fan scale whilst others have a round dial.

The third type is even simpler. It consists of an "all in one" cast aluminium cup, lever and counterweight which is fitted with a slide piece. The slide piece is pivoted on a stand by two small lugs. Weighing is done by sliding the lever through the slide piece. The weight is then read off a scale which is cast on the lever. The sample I have is of Italian manufacture and is branded Brevette.

The accuracy of these devices varies and their practical use is open to question. Like many kitchen gadgets they are probably used once or twice and then relegated to the back of a cupboard. Judging from some of my examples, which come with their boxes, this is what happened most of the time.

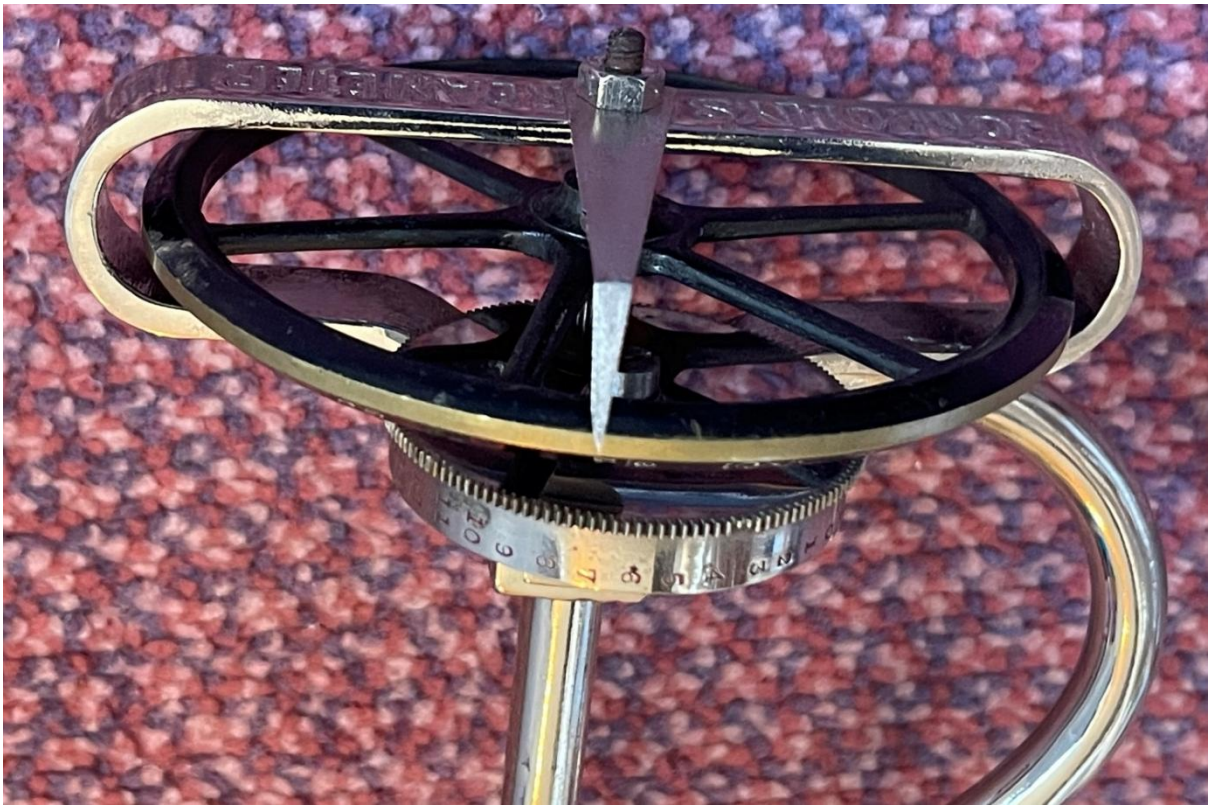
Tony Homden





A small version of the planimeter

as used by draughtsmen etc



Access all Areas

Edition 66 dealt with the measurement of the area of leather and some of the devices developed at the end of the 19th century to perform these calculations. Those principally employed were large powered machines which performed the measurement by means of complex, but readily understandable mechanical operations.

Mention was made however, of another device which did the same job without rollers, wires, wheels or pulleys. It was in fact a device so simple that it defied explanation, certainly to the mathematically illiterate such as me, as to how it could possibly carry out such a complex calculation with so little substance.

The device was marketed as the Areameter and consisted of two metal rods pivoted together with a couple of wheels loosely fitted at the rear of one of the arms (see above). One wheel was designed to either turn or slide, depending on the direction of travel and the degree of such movement was transmitted to the smaller wheel by gearing. The wheels were graduated and the result of the measurement could be read at a pointer. The major indications (sq. ft) were shown on the small spur wheel and the fractions could be read on the large wheel to the nearest 1/8 sq. ft.

In operation a heavy stand supporting the end of one of the rods, was placed on the hide to be measured and a pointer on the end of the other arm was passed round the perimeter. As the arms moved, the large wheel either turned or slid without turning depending on the direction of travel.

When the pointer had completed a full tour of the perimeter the area of the hide was miraculously displayed on the graduated wheels. If there was a hole in the hide, the pointer could be traced round it in the opposite direction and the area of the hole would be subtracted from the total.

When I first came across this device many years ago I was completely baffled as to how two pivoted rods could actually perform such a complex calculation. Many years later I am still little the wiser. I now know that it is based on sound mathematical principles and that similar devices, generally called planimeters, are in common use by architects, draughtsmen etc. Incidentally sound mathematical principles tend to make my head bleed.

We appear to owe the development of this 'planimeter' to one Jacob Amsler, a Swiss Mathematician and Engineer who came up with the idea in 1854. He produced these devices commercially in his own factory and they proved to be very popular. The scaled up version as used to measure the area of leather followed on later. The idea of an area measuring instrument was not new when Amsler developed his version, the 'polar planimeter', but his device appears to have been the most practical and most widely adopted. Despite the assurance that the workings of this device are grounded in sound mathematical principles, as the original mathematical idiot I still find it totally incomprehensible.

If it ‘aint Pembroke don’t fix it

Many years ago, I found myself in the far west of Wales, way beyond the Landsker line in Pembrokeshire or ‘Little England Beyond Wales’ as it is still known. Here the mellifluous cadences of Welsh gives way, thanks to some Norman stuff from way back, to English. Whilst wandering around the town of Pembroke, I came across an old chapel that had been converted by heathens, into an Antique Centre. At this time I still thought that cluttering up my house with ancient artefacts (old crap as my wife preferred) seemed like a good idea so I went in to explore.

As in most of these places the offering was largely not to my taste but it was a very spacious establishment so I continued to delve. Then I saw, peeping out of a pile of stuff the end of a nicely made mahogany box which looked vaguely interesting; you never know what may lie within a lovely box. When I extracted it I found it was a long, thin wooden box that looked like it might contain a George lll projector screen.

I opened it up and saw that within the fitted case were two chromium plated metal rods, hinged together at one end. One rod had a pointer attached to one end and a wheel arrangement on the other. There was also a circular piece of cast iron with a central projection which matched a hole in the free end of the other rod. Having diligently studied all aspects of the area measurement of leather, despite the fact that the legislation had long been repealed, I immediately knew that I was looking at an Areameter. The iron block bore the words Connolly Patent which gave a clue to the manufacturer. It had clearly seen better days. The chrome was peeling off the rods and the little graduated wheel had a couple of teeth missing. Anyway I bought it and lovingly lugged it back to Lincolnshire where I subsequently had the chrome redone and added the device to my hoard of chunky collectibles where it has sat for nigh on 50 years.

Round and Round She Goes (what she does nobody knows)

Whilst I was preparing Edition 66 which dealt with the measurement of the area of leather, I found myself watching a TV programme where a couple of antique dealers were wandering around an erstwhile Tannery in Derbyshire, looking for saleable artefacts. My interest

was grabbed, but I did muse that anything that came out of such a premise would need a bloody good wash before it went into your Smallbone kitchen. They were principally interested in old tables and the like and walked straight past the Turner 'Pin Wheel' measuring machine which to be fair, not even I would consider to be a potential enhancement to a Chelsea loft apartment but whose very presence pleased me greatly. Things then took an unexpected turn!

Leaning against the wall was a large wheel with various metal fittings attached which, to my surprise actually attracted their attention. So much so that one of them actually bought it, as a decorative item but without any idea as to what it really was. I could see that there was a metal rod, pivoted in the centre of the circle with a tracing wheel on one end, clearly designed to run around the rim and two graduated wheels on the other. This immediately suggested 'measuring device', with of course some superficial resemblance to the 'Areameter'. The voice-over commentary, vouchsafed that it was indeed a device for measuring leather but with no further details. I captured a few images which I have since studied but have to admit to being completely baffled as to how this instrument could actually achieve any meaningful measurement.

In the 'two-rod' Areameter the measurement is achieved when the pointer is run around the perimeter of an irregular shape and the measuring wheel either turns or slides without turning, depending upon the direction of travel. This action, by dint of some mathematical magic actually calculates the area within the perimeter transcribed by the pointer.

In the case of the wheel device there appeared to be no scope for any articulation of the rod which was apparently simply pivoted at its centre. The only motion, seemingly possible for either end of the rod is to run around the rim of the wheel. It appears that the measuring wheel array does articulate, as suggested by the crook in the rod, and thus turns on the rim as the rod revolves.

I'm still rather baffled as to what it actually measures as it appears to have no capability to prescribe an area, other than the circle on which the pivoted rod is mounted. My only thought so far, is that it could perhaps be a device for measuring out a circular template of known area for testing the pin wheel machine. If anyone knows, or has any bright ideas, please let me know.

Tea time

There's a Channel on Freeview that shows a lot of old films, which I quite like to watch from time to time (if only to marvel at the sight of people miraculously managing to park a car in central London).

My wife calls it the 'old blokes'' channel (although she doesn't always say blokes). It reminds me of the days when we thought it quite normal to enter a cinema halfway through a film, watch it until the end, watch another film (double features, continuous performance in those days) and then watch the beginning of the first film until it reached the bit where you entered the cinema. You would then say 'This is where we came in' and leave without thinking 'that was a bit weird'.

The OB channel recently ran a short 60 year old film about tea production and marketing in the UK which featured a 1960's packing line producing tea in ¼ pound packets. There was a brief shot of a multi-headed automatic packing machine churning out the pre-packs.

This type of machine had actually been around for longer than might be imagined. Automatic weighing machines appeared at the beginning of the 20th century and came in various shapes and sizes, from the thumping great grain weighers to the tiny tea packers. Some were purely mechanical in operation but the small, more delicate machines sometimes incorporated electric or magnetic components along with the beam or lever at the heart of the device. The single head devices of the 1900's had often morphed into multi-headed machines by the 1960's but the principles of operation hadn't really changed very much. Similar devices exist even today although electronic weighing has somewhat replaced the mechanical systems of the past. Many modern packing machines are now computer controlled and for each delivery the machine selects the best choice from a number of possible results thus achieving a much more accurate performance.