

# My Favourite Instrument 'A Very Silly Triangular Compass'

John Bateman

*'It happened that a treatise upon Mathematical Instruments really must be written, to be produced at all, scissors could do no more. The ignorance of the mere compiler, in this line, had become so striking as to be only ridiculous. Here is an instance: - A very silly triangular compass, which consisted of three jointed arms, moveable upon an horizontal centre, was illustrated in a work upon mathematical instruments published over a hundred years since. It is not very certain whether the instrument was ever made; but the next writer who wrote upon the subject extracted the description, also the engraving, except that his engraver, accidentally no doubt, made the joint very small. The next writer who recommended the instrument left out the joint altogether, whereby it ceased to be a triangular compass, except in the faint historical similarity to the original. Subsequent writers unfortunately followed the last description, and also the last engraving, very much to the perplexity of the more philosophical reader'*<sup>1</sup> (W.F. Stanley)

## Introduction

This is an interesting observation by William Ford Stanley, especially so since I have in my collection, a triangular compass of this type. It is probable that Stanley first saw this illustrated in George Adams's 1791 edition of *Geometrical and Graphical Essays*<sup>2</sup>; later it was engraved by John Farey and published in Rees's *Cyclopaedia*<sup>3</sup> [see also Hambly's<sup>4</sup> plate 31]; and by J.F. Heather.<sup>5</sup> It had crossed my mind that, with so many fakes and reproduction items about these days, I may have bought an imitation. However, everything about the instrument points to some age, including the mahogany box and its method of construction; also the brass instrument looks professionally made, possibly between 1790 and 1860. We should not disallow deliberate faking, for instance on the rusting screw heads and a decayed box fastening; elements that usually point towards some antiquity.

## Description

The triangular dividers came into my possession a few years ago; they have no maker's name but it is well made and comes in its own mahogany box, the instrument has a circular brass base that is removed and placed in the box as a separate item; the rest of the instrument folds to fit neatly in the box, above the lower brass plate (Fig. 1).

The *mahogany box* is small, being only 110 mm x 55 mm x 55 mm deep, the thickness is 7 mm; there is a separate arrangement at one end to take the lower plate of the compasses, which is secured with a small wooden turnbuckle: the box and hinged lid are



Fig. 1 Compasses folded into their mahogany box.

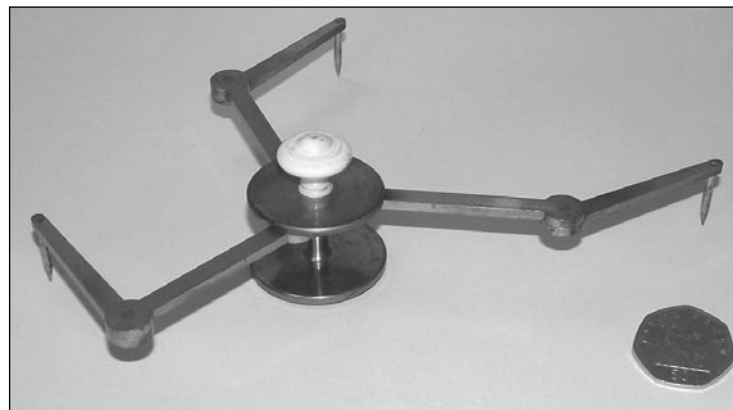


Fig. 2 The Flat-pattern Triangular Compasses open for use.

lined with green baize. Externally the box is simple with two brass crescent-shaped catches (one mostly missing now), and a delicate 'string line' on the lid; the base of the box stands proud of the sides which is typical of box construction for this period, and as far as I can see, the corners have simple mitre joints.

The *Instrument* (Fig. 2) is lacquered and comprises a flat, circular brass base or '*Lower Plate*'; at its centre is a tubular pillar that supports the upper parts of the instrument and a slot near the top of this tube engages a pin or lug to prevent it moving when in use. The base is 41 mm diameter and the thickness is 2.5 mm; the central tube is 16.6 mm high and with an outside diameter of 6 mm. The only other details of the lower plate are the three tiny steel pins protruding from the base, to grip the drawing pa-

per of course.

There is a corresponding brass plate, which I shall call the '*Upper Plate*', with a diameter of 39.3 mm it is slightly less across than that of the lower plate. This upper plate has a central threaded hole with a key slot (Fig. 3), the brass rod with pin or lug passes through this hole and is secured by screwing into the top of the upper plate; the ivory knob is screwed to the rod end. As indicated, the key slot in the plate is to enable a pin attached to the rod to pass through the upper plate and engage with the notch on the lower plate; about 7 mm of the brass rod is divided by central cut at its lower end.

Apart from three steel pins that screw into the ends of the tapered *articulated legs or arms*, the main part of the triangular compasses are secured to each other and cannot

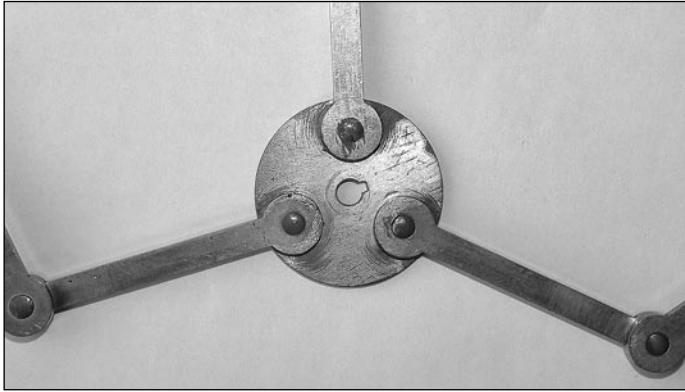


Fig. 3 Under top plate.

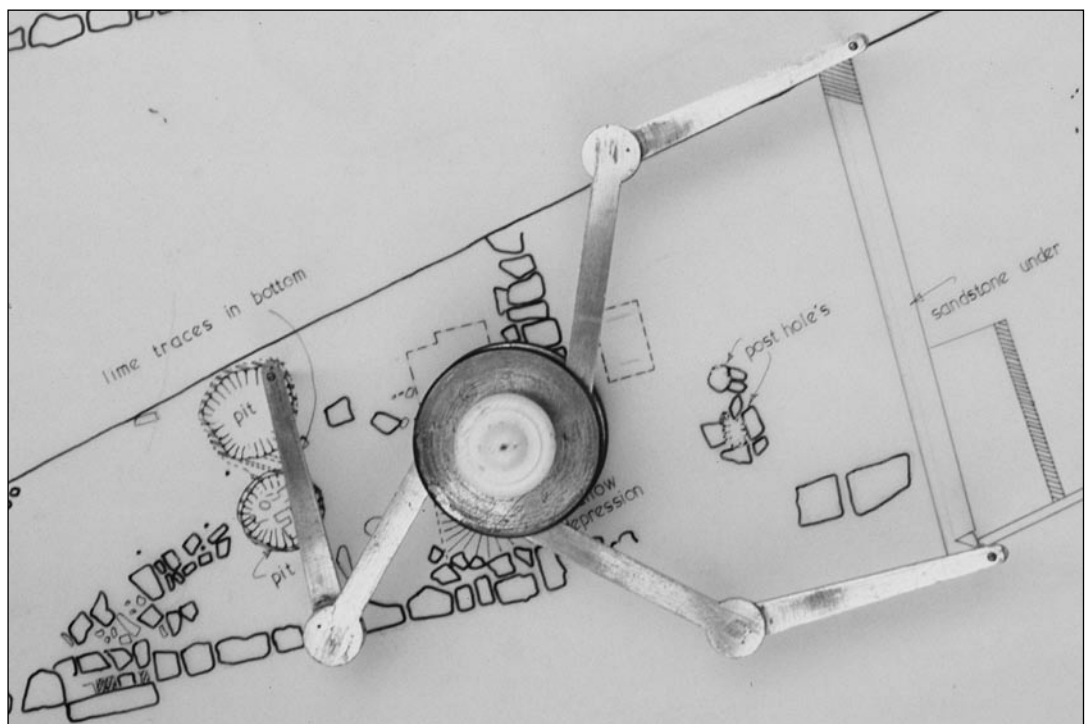
easily be separated. This includes the top plate described above. There are six articulation points for the arms. First, three brass straps or 'Parallel arms' 6 mm wide and 3 mm thickness with an individual length of 69.7 mm; these have a round ends of a 12.8 mm diameter at the upper plate end and slightly less at the tapered arm articulation end; they are secured to the upper plate and the tapered arms by rivets or screws that are not removable. The 'Tapered arms' have an overall length of 64.3 mm and taper from 7.2 mm width to 4.2 mm; the ends are female threaded to take 20 mm long pointed steel pins or feet.

### History and Dating

I can write little of the history of this instrument. William Ford Stanley writing in the late nineteenth century, said it was about 100 years since the instrument first appeared in print. An illustration in Adams's book<sup>6</sup>, may have been the one Stanley was referring to but I am uncertain; a similar illustration by Farey in Rees and in J. F. Heather's *Treatise*<sup>7</sup>, illustrate Stanley's point about a regression of the drawings. This is opposite to what normally happens to artefacts, where they start off in a simple state and gradually become more elaborate through time. These of course are not artefacts in themselves but simply depictions of something not drawn from the instrument itself but from a mind's concept of it. Apart from these three illustrations, I have so far been unable to find further references. In particular, not the totally useless retrogressive form referred to by Stanley.

Dating my flat-pattern triangular dividers is difficult.

Fig. 4 Flat-pattern Triangular Compasses being used on a plan.



First, their similarity to those drawn in Adams's *Geometrical and Graphical Essays*, is very close. In Adams the central plates are not depicted strongly and both sets of arms are tapered, but in general principle they are the same, even to the shape of the ivory knob.

This observation leads me to suggest that they could be by George Adams and that would give me a date of around the 1790s for their manufacture. Stretching the dating to the 1860s is difficult, given my comments on the retrogressive illustrations, but its possible.

### General Comments

These unusual compasses are submitted to the SIS membership under the guise of a favourite instrument, although in truth I don't have an outright favourite. I do have interesting and unusual instruments (to me at least), and these particular triangular compasses have elements of both.

The flat pattern triangular compasses described are well made, and although their functionality may leave much to be desired, set against conventional three-legged upright designs, they nevertheless have an intriguing quality. Whilst some would appraise them very silly from a practical point

of view, I simply view them as a collector's instrument having little need to use them as a practical tool. I view them folded away neatly in their mahogany box, and taking them out I view them opened up like some mechanical insect on the drawing board (Fig. 4). A wonderful concept of drawing instrument design they are not: a modern deception based on an old idea - again I think not. They are plain and simply a drawing instrument design that never achieved a place alongside other draughtsman's tools.

### Notes and References

1. W. F. Stanley, *A Descriptive Treatise on Mathematical Drawing Instruments* (probably 1873 or later edition), Preface extract, p. iv.
2. G. Adams, *Geometrical and Graphical Essays* (1791), Plate III, Fig. 12.
3. A. Rees *The New Cyclopaedia or Universal Dictionary of Arts & Sciences* (London 1802 - 1819).
4. Maya Hambly, *Drawing Instruments 1580-1980* (London, 1988), Plate 31.
5. J. F. Heather, *Treatise on Mathematical Instruments* (London, 1856), p. 7.
6. Adams (note 2).
7. *Ibid.*

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