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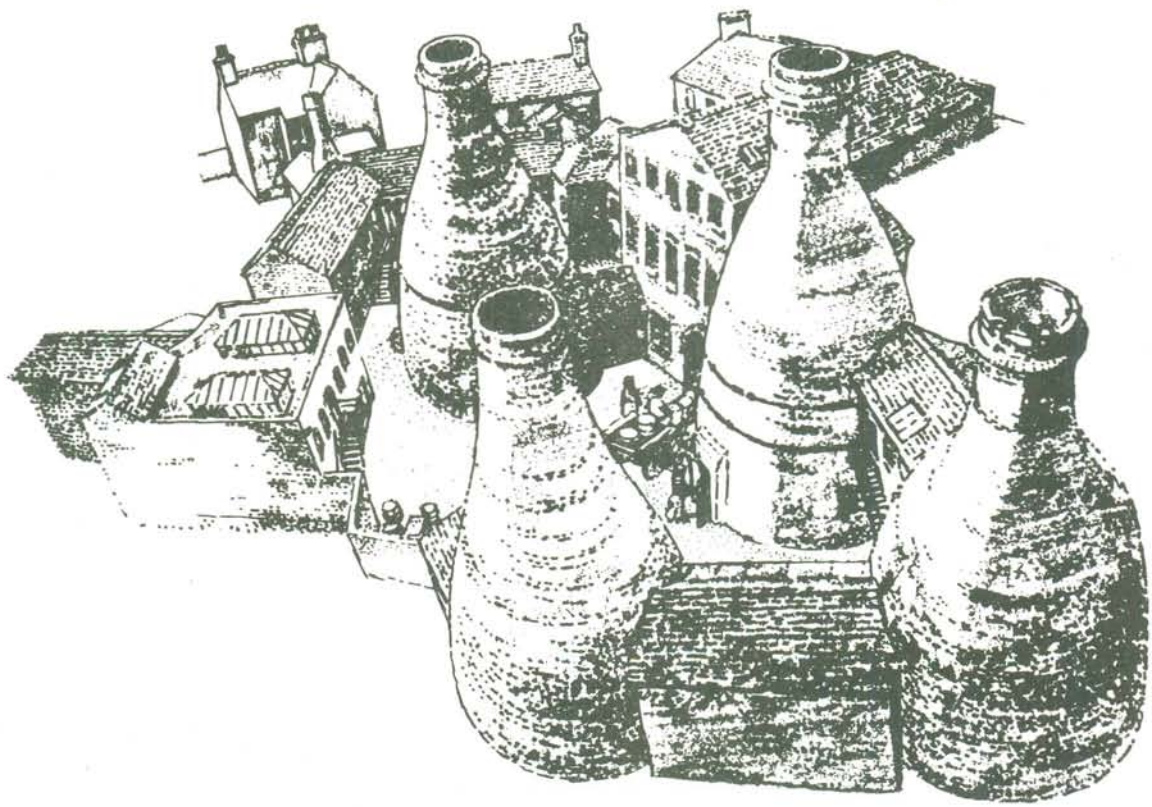
A meditation beginning with thoughts on the Gladstone Pottery Museum.

What can we learn from Industrial Museums?

Museums about our industrial past are presently in fashion. Most of them are intended to 'preserve' or 'conserve' a certain 'heritage', to use the jargon of heartrending public appeals for cash. But it has also become useful to claim that industrial archaeology museums are of great 'educational' value. Most industrial museums, when school or college parties are on the point of departing, receive effusive thanks for a most 'interesting visit'. However most educators feel uncertain about the equation 'interesting equals educational'. It is not old fashioned to suggest an educational visit to an industrial museum (or indeed any other museum) can only be tested by two rather unattainable methods: (1) examination or other assessments and (2) by some science fiction meta-Kenneth Richmond test for cultural and imaginative impact. Such tests seem to be and probably are unattainable, so that it may be useful to come down to earth by hinging on the Gladstone Pottery Museum some thoughts about the educational value of museums of crafts or industries.

The Gladstone Pottery Museum in Longton, Stoke-on-Trent, is said to be about potting rather than pots. Other museums in the country know about pots, but the Gladstone studies the making and manufacture of pots. In official descriptions the museum is, first of all, said to house what it can collect of the history of British potting with special emphasis on the Staffordshire pottery industry. Secondly it is a working pottery museum not merely showing potters at work but preserving or recording skills that form the past tense of modern industry.

Run by a trust, the Gladstone operates pottery shops, a teashop and provides facilities and guides for school, college, club and other parties. Most of the party visits are shown round by skilled volunteer guides, but classes in potting are taught by professional or trained teachers. Besides covering the history of potting, the Gladstone has galleries



View of Gladstone Pottery Museum, Longton, Stoke-on-Trent. Its purpose is to house relics of the history of English potting as well as preserving and passing on the skills of the 17th century and later, which have created the modern industry.

of tiles, ceramic sanitary ware and colours. The central yard, dominated by four giant bottle ovens, is an unspoiled feature and there is an impressive steam engine driving machinery in the sliphouse. It is hoped to have in the near future, a brick and roof tile gallery as well as an electrical ceramics gallery. Work is currently being carried out for setting up a late 19th-century potter's house with a bedroom and a kitchen as part of the display.

All the above, carried out on a shoestring, has won the Museum many awards, but what is to be considered here is how far the Gladstone or a similar industrial museum can help in technical, design and craft education as well as doing its bit for 'liberal' and any other studies that 'enlarge' the mind or imagination. Perhaps the most important test of a technological museum is its ability to trigger off new ideas.

Leaving aside the Gladstone as a special case we should consider critically how far industrial museums could maximise their impact, especially when most people visit them only once. Ideally effects should last a lifetime but most of us would be grateful for an intellectual or cultural 'shot-in-the-arm' effect.

The principles to be considered are three in number

(1) *Seeing the world upside-down, but laterally*
Most readers will be aware of Edward de Bono's, 'Lateral Thinking' and also of the method of 'Brainstorming' whereby, during the process of thinking out something new, participants' silly suggestions are accepted since they might trigger off or catalyse different ideas. The process can be a deliberately cussed one. The assessment we can make of a potential design has got to go further than that exemplified by the child observing 'The Emperor has no Clothes'. One has also to be able to perceive sometimes that 'The Clothes have no Emperor' – a more significant observation. Such critical approaches should be a fundamental result of any basic course of instruction that relates to living or doing.

(2) *The Samurai's sword*
In the 19th century many Japanese felt that they had systematically to educate themselves away from their medieval culture so that they could take on the strengths of western know-how. Some thinkers accordingly set about methodically examining all their institutions to see what was fossil or obsolescent. The sword of the Samurai, who had no further use for it, rusting in its scabbard was an example of one of these ancient leftovers which had to be exorcised. The word used by some Japanese for such fossil survivals was *Wakudeki*. It is a useful concept for all of us whether it be in running our lives or in redesigning something. It offers a method for hunting out whatever of the past is no longer necessary. Examples might be the three or so buttons on a man's jacket sleeves or wakudeki coachwork in early motor cars and so on.

Archaeologists often see falsities in design where a shape occasioned by an original material is transferred unthinkingly to a different material. Thus a ceramic vessel may imitate a metal prototype. There is no harm in this when an elegant silver vessel is appropriately imitated in clay, but a ceramic or plastic jug carrying non-functional features from a pewter original needs a critical or, even, a scathing approach. Archaeologists call such objects 'skeuomorphs', an awkward term but a useful idea.

(3) *Fishing it up once more (repêchage)*
The idea of learning about the past to eliminate components of departed cultures so that they do not affect our designs is easy to grasp. But hunting for the wakudeki is a negative sport. The past, in the form of museums and objects and records of the past, is undoubtedly a quarry for ideas. A tour through a museum of ceramics will give us ideas about new shapes to make or buy and decorative features to borrow or develop. The ceramic industry has often used the past creatively. One interesting example is the revival of a gloss technique once used on Roman 'Samian' pottery. A very fine clay suspension was used to produce this gloss and the same technique was applied to modern floor tiles. These tiles could be fired stacked one on top of the other without any glaze-sticking.

While we all can pick up hints from the past, our problem is to use it systematically for producing something new. French engineers have a word *repêchage*, which means the 'fishing up again' of old ideas, designs and products so that all past problems are reviewed and all worthwhile features are considered. The old wakudeki aspects are rejected and lateral or similar methods of thinking are applied to achieve something new. The IBM 'golf-ball' typewriter was created in this way after

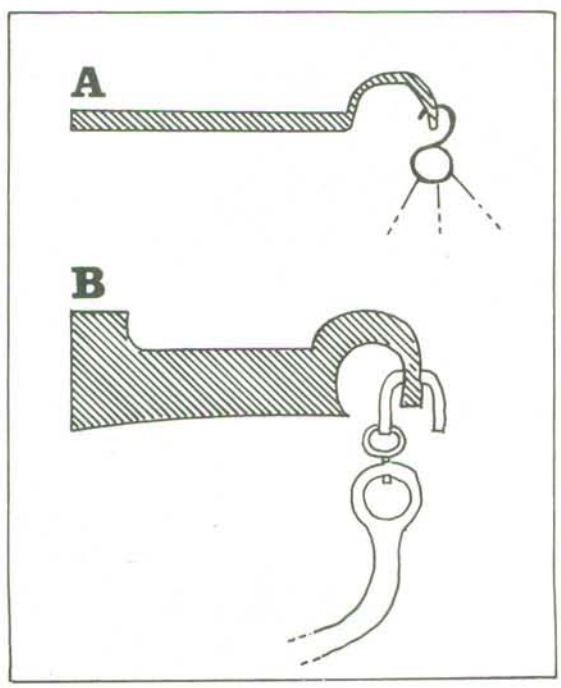


Figure 2.
The 16th- or 17th-century gallows or swan-neck beam-end of a scale balance (fig. A) could, being slender and of pliable brass, be adjusted to ensure a precise balance. A similar curved beam-end in a cast iron (fig. B) balance in the Gladstone Pottery Museum is an absurd anachronism since it cannot be bent to adjust the length and weight of the beam minutely.

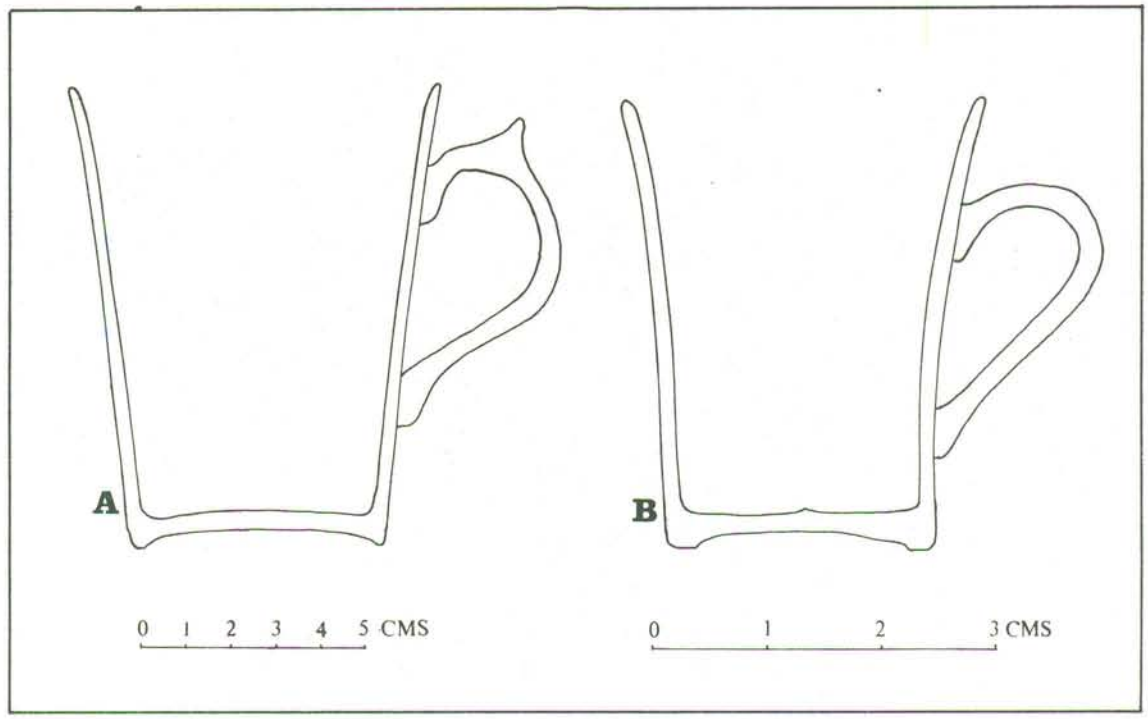


Figure 3.
These two bone china mugs, each made at Longton in 1979, offer useful lessons in the understanding of pottery. Mug A is lighter in weight and cheaper, being made since the 1960s by German machinery – a point for future archaeologists. Mug B is made by traditional machinery. A potter would spot the slight button in Mug B, inside at the centre of the bottom, and would regard it as a fault as seriously as he would if he saw it in the centre of a plate not of first class workmanship. The ordinary user would not be so fussy about this.

Few people can agree on the right mixture of utility and elegance required in a handle. One should note that the spur on the handle of Mug A is functionally unnecessary. Excellence does not increase with time, but a combination of design sense and diligent consideration of past shapes can produce good wares.

the old lever system was found wanting and old ideas of cylindrical heads with all the letters on were revived.

It could be argued therefore that in theory a museum of cars which is well endowed with records and plans could be a place where an utterly new car design is thought out. While some might suggest that new ideas can only come by completely excluding the past, it is in practice better to eliminate aspects of the past one by one with all one's mental systems on to go to engage in creative lateral thinking.

Stirring the Mind

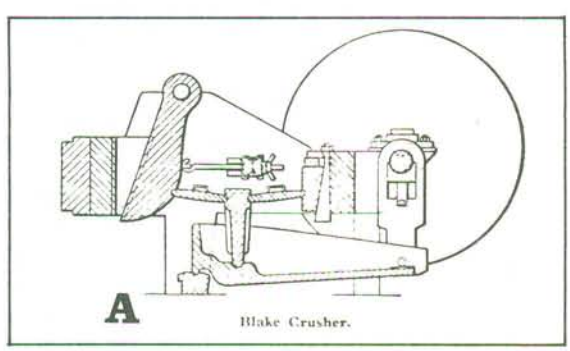
It will be hard for the reader to assimilate the strange mixture of terms referred to above. For we are being asked to 'laterally de-wakudeki our repêchage creatively'. To achieve this an industrial museum could work by means of case histories. Most visitors to museums would like to encounter displays which explained how a problem was solved. We might bring forward a recent example of lateral thinking in the ceramic industry. The industry has machines which consist of a silicone rubber bun that rolls a design on to a plate. There were problems in operating such plant which were solved by the ceramic experts by modifying neither the machinery nor the vessels but just the ink.

Does the ceramic industry hunt out ruthlessly its archaic elements? It certainly has a difficult task because the majority of its clients want traditional designs which may seem hideous to those who have tried to rationalise their tastes. Thus commercial, social and other very human reasons can make us retain designs of the past that are undesirable aesthetically or technically.

One incidental example of an ancient survival of no value to be found in the Gladstone is not strictly ceramic, being a set of scales (see fig. 2) in the colour and glaze gallery of the museum. The iron beam, at the point where it joins the chains for the pans, ends hookily like a parrot beak. It seems to be a reasonable shape until one is told that a few centuries ago the parrot beak was of bendable brass so that the length of the beam could be delicately adjusted to make it evenly balanced against the other end. It is not merely wakudeki but idiotic to have a similar beak in unbendable wrought or cast iron.

The ceramic industry relies on materials which no careful historical consideration will remove from use. Thus clay will not disappear as a raw material any more readily than say paper for which one cannot readily think of a substitute. (One hopes the reader is thinking hard). But in the last few years some progress has been made in research on plaster of Paris which has been used since the middle of the 18th-century for casting pottery. Most teapots and every sink have been made in plaster of Paris moulds. Teapots can be made by throwing but the time factor is prohibitive.

Oddly enough repêchage has been used by at least one pottery firm that produces the traditional small brown teapots. It is alleged to make 20,000 teapots a week and to sell 20,000 teapots a week. The methods of making the teapot illustrate four traditional techniques. The lid is pressed, the handle is cast solid, the spout is drain or hollow cast (by pouring slip away from a mould after a certain time) while the body is 'jollied' by a machine squeezing clay against the walls of a plaster of Paris mould. Thus we have four traditional techniques, all devised by the 1840s, being brought together over a century later to make teapots economically. One would like to say at this point that industrial museum is a place where good ideas for Intermediate Technology can be hatched.



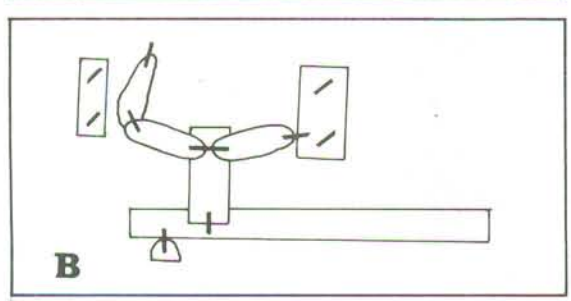


Figure 4.
The Blake crusher of 1858 has long been used in the ceramic industry for crushing materials. The machine itself or diagram A would not readily help a newcomer to understand the use of toggles and other such lever systems. Diagram B shows a cardboard model made to explain the strength of toggle joints. Strips of card were put together with a desk stapler to produce a model that explains the mechanism. A good industrial museum should induce us to produce such interpretative models.

A museum of industrial history does not need to concentrate on the distant past. A consideration of two bone china beakers made in Longton in 1979 (see fig. 3) can show the irreversible progress of machine design as well as the recurrence of undesirable design features.

The Gladstone Pottery Museum, was officially opened only in 1975 and it will be a long time before the points made above can be exemplified in its galleries. The reason (or excuse) for this is shortage of finances and staff. But we recall the saying that a good teacher could make good lessons out of anything. Thus a drawing (see fig. 4) of a crusher of ceramic raw materials is not illuminating even to the intelligent layman, but the teacher who can make (or cause others to make) a skeleton model that moves on hinges that are merely paper staples, can catch the imagination with what is no more than an arrangement of compounded levers. Similarly an imaginative teacher can explain the analogy that exists between the idea of variable gears (very complicated to operate) and the practical solution of using a sliding band between facing inverted friction cones (see fig. 5). Making the two cones slide up against each other to obtain a variable speed, while retaining the friction of pressure, is an ingenious development which when described by an enthusiastic teacher who understands our slowness to understand can impart an 'appreciation of technology' which is an important part of a truly liberal education.

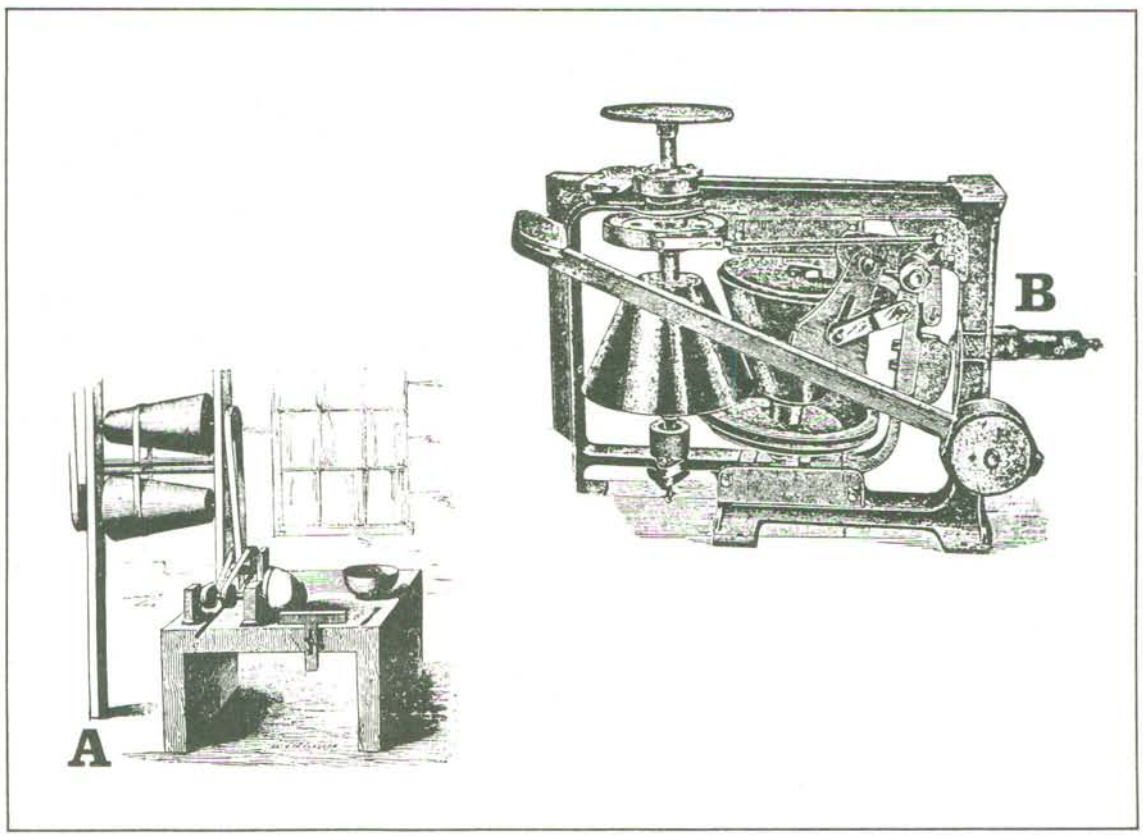


Figure 5.
The two cones (c. 1850-1860) of a potter's lathe in figure A are connected by a movable strap which can be used to adjust the speed of rotation. The potter's wheel (of the period 1860-1890) in figure B uses a similar principle but, instead of a belt, the friction between points of contact on the steel cones is utilised. A museum of technology fails if it cannot help the interested visitor to grasp the mechanical analogy between the two machines and the fact that the principle behind the gear ratios and, ultimately, of the lever, are here exemplified in a special way.