

## An Old Medallion and Rose Engine Lathe.

By GEO. GENTRY.

A PREVIOUS short note on page 170 of this volume gave the reader an outline of the characteristics of a lathe of this description; it is now the business of the present article to illustrate and describe an uncommon example of a machine which actually exists in its entirety, although in several respects, by the aid of some old drawings, the owner has had to restore missing parts in order to render the tool capable of doing actual medallion cutting. It is not the least interesting point how this last restoration was carried out.

with his equally ill-fated Queen, Marie Antoinette, suffered the guillotine at the hands of the revolutionaries in 1793, was surnamed "The Locksmith," on account of his mechanical proclivities. Samuel Smiles says, in his "Industrial Biography," where dealing with the life and work of Henry Maudslay, more especially in connection with his lathe inventions, that turning was a favourite amusement among the French nobles previous to the Revolution, and that Louis XVI could have earned a very good living as a locksmith. Also

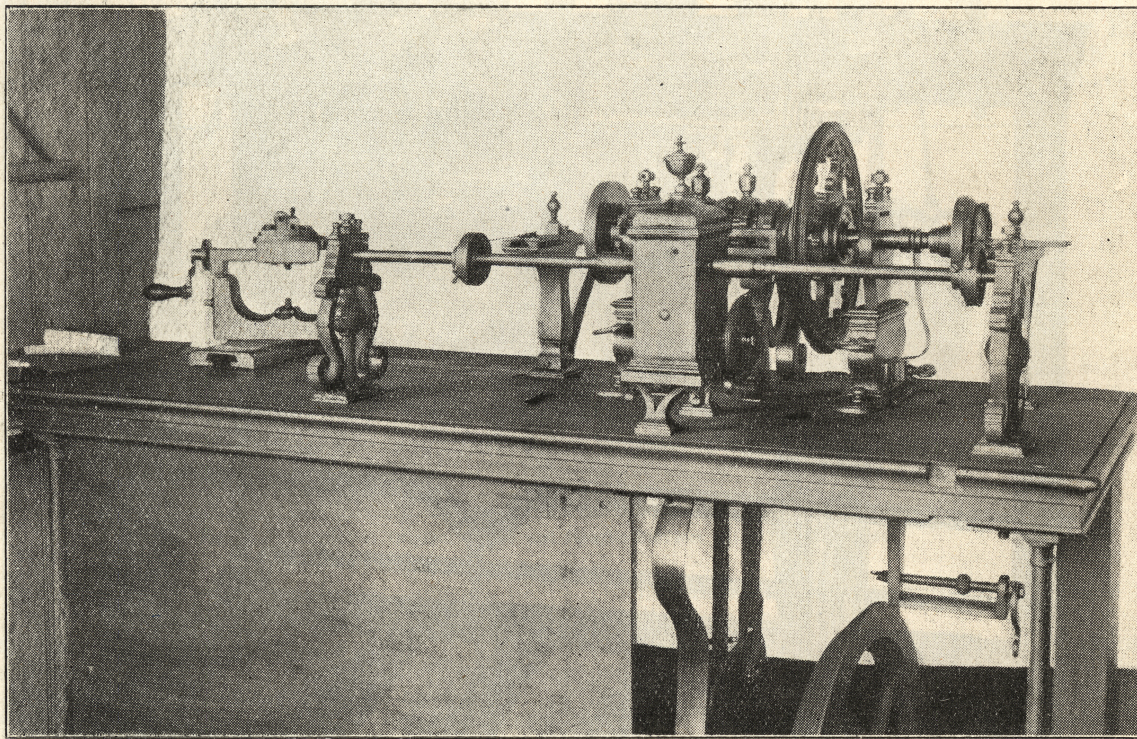


Fig. 2.—Back View of the Lathe, showing the Old Portions and Some Renewals.

The lathe, a front view of which appears in Fig. 1, is the property of Mr. A. C. Jackson, late of Worthing, and now of Vancouver, British Columbia, and it was only by a last effort on the part of the authorities at South Kensington that the old machine was saved from going to the New World with Mr. Jackson, upon whom they prevailed, just previous to his departure, to lend it to the Museum during his more or less indefinite absence. A tradition which goes with the history of the lathe is that it was the property at one time of King Louis XVI of France. This ill-fated king, born in 1738, who, together

he mentions that George III (1738-1820) was great at turning, and was learned in wheels and treadles, chucks and chisels, and in this connection it is stated, on the authority of a contemporary old working turner, that, with average industry, this king might have made from 40 to 50 shillings a week as a hard wood and ivory turner—not much for a royal personage this, but it meant, of course, considerably more in value than it does to-day. There were other royalties interested in fine mechanics and turning, previous to these, for instance, we find that Peter the Great of Russia (1672-1725) was also well versed in the usage of

such high-class machines. In the course of correspondence Mr. E. A. Forward, of the Science Museum (South Ken.), states that, in a recent visit to the Conservatoire, Paris, he saw there one of the oldest sliding mandrel lathes, which had been presented to the French Instituté by Peter the Great in 1717.

Paris was not likely to have been the maker, because one good instance of a rose turning lathe, which Mr. Forward showed the writer at the South Kensington workshops, where it is undergoing restoration previous to exhibition, was undoubtedly made by Hulot, as it bears his name together with the date which is, as it

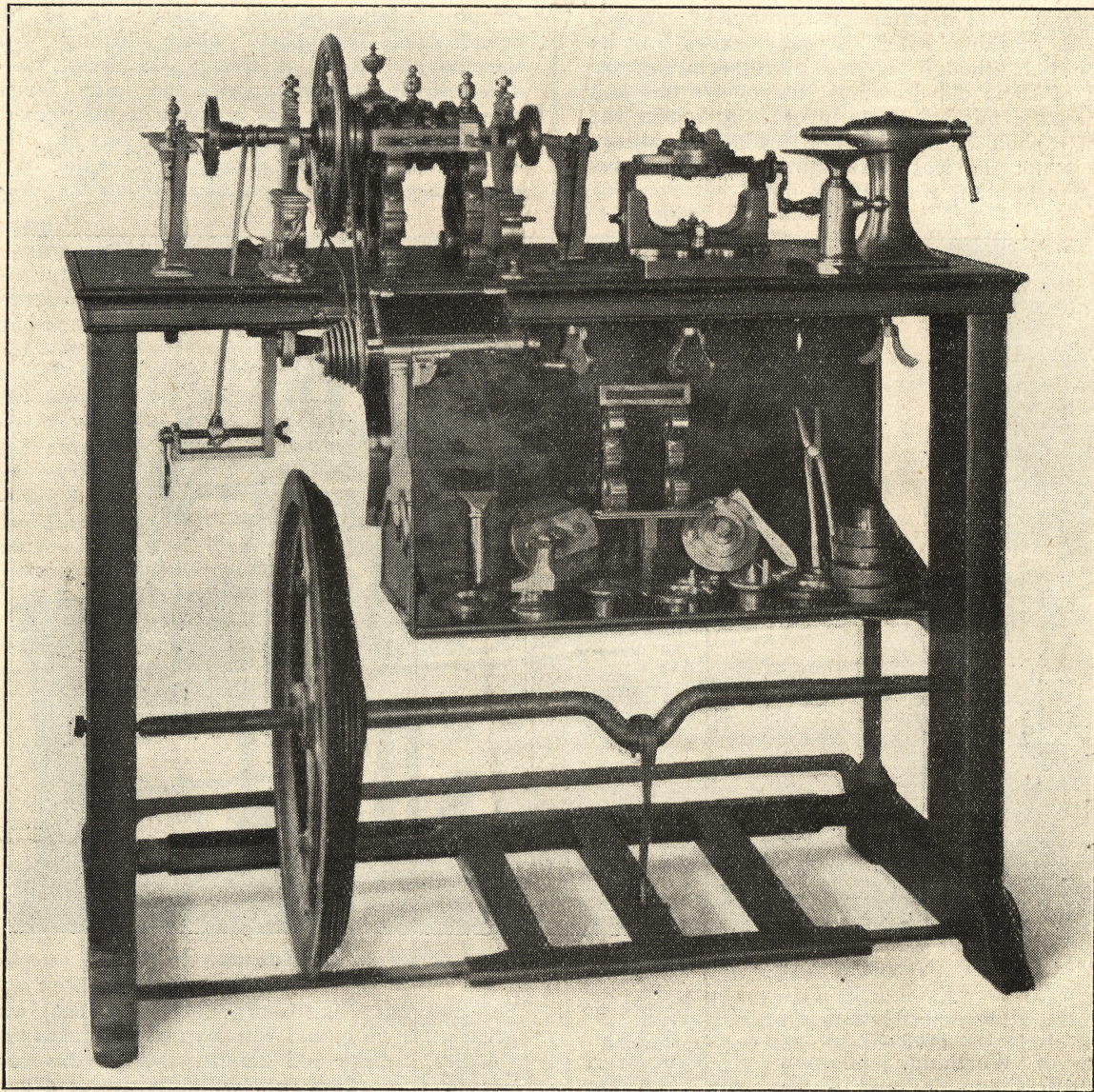


Fig. 1.—Front View of Medallion and Rose Engine Lathe of Date about 1760.

From careful reference it seems likely that the date of the lathe we are considering is about 1760, but the question of the maker is difficult to decide, although it is undoubtedly of French manufacture. Much may be expected from Mr. Forward's researches in the matter of these tools, but one point seems clear, that Hulot, of

happens, 1760, whereas the tool as shown, in Fig. 1 has neither name nor date.

Consideration of the machine seems to indicate that the main headstock, brass bed, and mahogany table top, together with the sliding rest, and cross rests at the head and tail of mandrel are original work. Also, turning to

Fig. 2, which is a view at the back, taken by the writer when the lathe was at Worthing, we see the gearbox, which is also claimed to be original. As to the remainder—not including the chucks and accessories—the main mahogany frame and treadle gear, together with the cylinder pattern tailstock and hand rest—both of solid gun-metal—all look very much like the work of Holtzapffel. Here again, however, in the absence of any ready means of getting at Messrs. Holtzapffel's connection with the machine, the present representative of that firm is not so sure that it is their work. In any case the parts last mentioned are undoubtedly of later date, and examination of them will bring no discredit to the last-mentioned firm if, by chance, their name should become associated with them. The original machine was evidently not treadle driven, because there is existing, as can be seen in Fig. 1, a crank handled manual driving shaft at the front, which, with the

or 70 years ago by the brother-in-law of a prominent banker resident then in Worthing, to whom it was ultimately given. He, having no use for it, presented it to a local wood turner, who, again, in ignorance of the working of the more or less incomplete parts, did not put it to any use, but disposed of it to a local doctor interested in ornamental turning and amateur mechanics generally. At the sale of the effects of the latter Mr. Jackson found it, in a distinctly derelict condition in the cellar, where it had been dumped as a miscellaneous lot with other odd stuff, and concluding, from such examination as he was then able to make, that he had found something interesting, bought the lot under the hammer for the usual inconsiderable amount that such odd lots always go for. Since then, by assiduous enquiry, he has been able to ferret out such points and traditions as have been set forth above. No doubt, with the facilities which the Museum Authorities have at

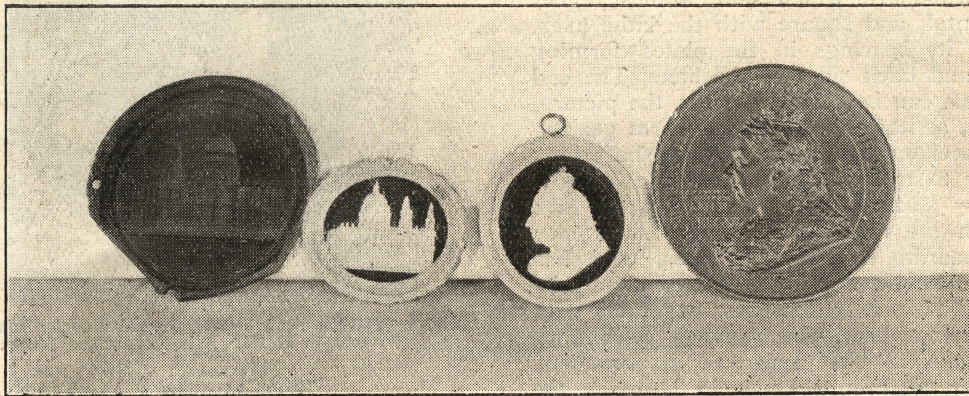


Fig. 3.—Examples of Original Cameo and Intaglio Surfaces with the Ivory Copies.

exception of the speed cone upon it, appears to tally with the original work. Mr. Jackson, in examining the main frame, came to the conclusion that whoever set it upon the present mahogany standards evidently used some of the old wood frame, as he points out that the back of the uprights has been mortised for a lock bolt at both ends, and there are also evidences, both in the top of the feet at the back, and correspondingly on the underside of the top table, of there having been bearings for door hinges near about where the corner upright cast-iron columns stand. These columns are not original, as the iron-work generally of the tool is all wrought, and brazed where necessary—actually built up and all hand work. Excepting what Mr. Jackson has added, there is no cast-iron in the machine, although plenty of cast brass. It came into being before the vogue of cast-iron, hence the columns must be of later addition, and in their place were evidently wood doors.

The known history of the tool is that it was brought to this country from France some 60

their command, more of authentic data will be available in the future.

In his enquiries Mr. Jackson naturally included South Kensington as one principal source, and here he was unable at first to impress the authorities in any manner with the historic importance of his find, until, by the aid of a volume of plates, illustrating the text of an old French Encyclopædia, wherein a similar lathe is fully drawn, and which happened to be in the technical library of the museum, he not only assured them of the unique possession of an old-time lathe, having a feed gearbox, which is the principal point, marking it as a genuine specimen of a sliding mandrel medallion lathe, but these drawings rendered it possible to visualise certain missing parts, drawings of which he made, and so was enabled to restore the machine to its original working condition. The book mentioned is the Encyclopædia Methodique, in 8 volumes of text and 5 of plates, dated 1780, or thereabouts. It exists in its entirety in the Patent Office library in

London, and, by the courtesy of the librarian, facilities were given the writer to take photographs, so that, by their aid, sufficient scale data is available to explain the machine, or a similar one, to the reader later in these notes.

In Fig. 1 most of the gear at the back is not present, but in Fig. 2 the gearbox, which is in position in Fig. 1, but hidden, is rendered quite apparent, together with Mr. Jackson's additions. The gearbox, which has the ornate architectural characteristics common to most old high-class machines, is built up entirely in iron-plate and bar, beautifully filed up after brazing together. By removing the top cover by means of its urn-shaped handle, the gear is disclosed. This consists, at the bottom, of a horizontal shaft with bearings in the head and tail sides of the box, and a worm at its centre. Upon the outside of the box the worm-shaft takes its drive in a ratio of 1 to 1 by a crossed round belt and vee pulleys from the mandrel. Gearing with the first worm, in a ratio of 48 to 1 about, is a wheel on a second worm-shaft, which shaft stands higher up, horizontal, and square with the lathe axes, and takes its bearings in the plates forming the front and back sides of the box. The end of this shaft can be clearly seen in the picture, and it has, at its centre, another worm gearing with a wheel on the upper parallel shaft in a ratio of 72 to 1 about. Thus the total ratio is  $72 \times 48 = 3,024$  to 1, or roughly 3,000 to 1 down from the mandrel. The top shaft also takes its bearing in the box sides, and has couplings upon the outside at each end to take extensions. These extensions, together with their ornamental bracketed bearings, were made by Mr. Jackson. The design of the brackets, which are in cast-iron, follows, in the main, the design of the brackets supporting the rose cam guides, seen in front of the headstock in Fig. 1 and also on the shelf under bed, with the addition that they are made double legged, and have an ornamental spindle with ball garniture supporting the centre, which follows the design of the supports, as shown in the drawings referred to, and which will appear in a continuation of this article. The main bearings of the lathe are halved, and are apparently of solid block tin, and the design of the shaft bearings which have been made follows that of the main bearings, but the lining blocks are as far as the writer can remember of gun-metal. This shaft carries the feed pulleys, which stand on the same opposite the cross-slides. There are two "speeds" to each of the two pulleys, which are alike, and, as the function of the pulleys is, by means of a flexible steel wire, to pull the slides across against a strong spring, by using equal speeds, equal traverse is obtained, and by using unequal speeds one reduction or enlargement can be effected, according to whether the speeds are geared down or up, the proportions obtained being the proportions of the two speeds of the

pulleys. The headstock will be described later, but the speed of the lathe when dealing with a medallion of about 2 ins. diameter, and working on ivory, is four revolutions a minute, and the traverse length is about 1 in. The traversing pulleys are about 8 ins. in circumference, therefore, to traverse 1 in. the top gear shaft only revolves one-eighth of a revolution to traverse across from the centre of the medallion to the

outside. The speed of this shaft is  $\frac{4}{3,000}$  or  $\frac{1}{750}$  of a revolution per min., so, to move a one-



Fig. 4.—Full-size Photo of Ivory Medallion Copied from the Medal seen in Fig. 3. It is Mounted on Ebony.

eighth of a revolution, it requires  $\frac{750}{8} = 94$

minutes, or just over  $1\frac{1}{2}$  hours. The whole job is done in one cut of this duration, the time thus worked out being only approximate. The direction of the lathe, it will be noticed, is opposite to the normal, because the feed traverse is outward towards the back, but normal direction may be used by applying the cutting-tool upside down on the rest.

Fig. 3 shows some results. Here, to the right, is seen a medallion of Queen Victoria which measures about 2 ins. over the cameo (or relief figure); from this a copy in ivory has been made about three-quarters the size, and shown in a rose-turned ivory frame next to it. The other ivory medallion of St. Paul's Cathedral has been cut from the wax intaglio to the left, which was taken from a similar cameo to the original of the other. In the case of the first medallion a similar intaglio was made from the medal as that shown of the cathedral. Fig. 4 is a full size reproduction of a medallion copied from the medal seen in Fig. 3.

(To be concluded.)

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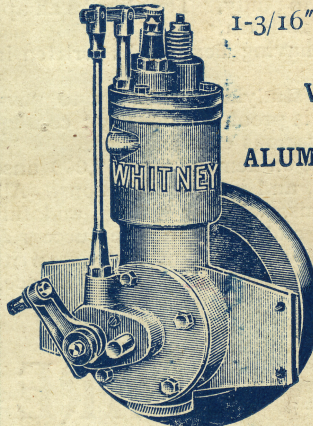
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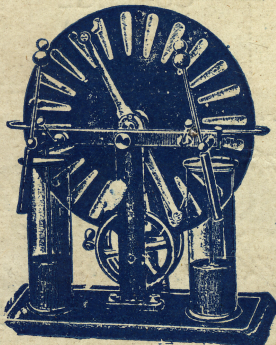
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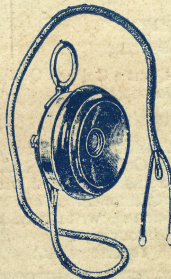
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# The Model Engineer

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## Our Point of View.

### The King and Model Power Boats.

In an article in November 30 issue last some reference was made to one of the early Presidents of the Victoria Model Steamboat Club. In order to dispel any misapprehension on this matter we wish to point out that the present President of the Victoria Model Steamboat Club is F. J. Pierson, Esq. This gentleman was presented to the King on the occasion of the Royal visit to the recent Marine and Small Crafts Exhibition, and it became his very pleasant duty personally to conduct His Majesty round the stand of the Victoria Model Steamboat Club. The King took more than ordinary interest in the club's exhibits and asked many technical questions. In the course of conversation His Majesty informed the President that he had had no previous idea that there was any such organisation in the country. Mr. Pierson is therefore naturally very proud of the honour of introducing Royal interest to the model engineering world *via* the Victoria Model Steamboat Club.

\* \* \*

### Work Ahead for Model Aero Engineers.

That another step has been taken towards the adequate recognition of model work as an ally of full scale practice is an encouraging sign of the times. The news comes through the Society of Model Aeronautical Engineers, who call attention to a paragraph in the official notices to members of the Royal Aero Club which reads: "At the Committee meeting of the R.A.C. held on Wednesday, November 22, 1922, it was decided to recognise the Society of Model Aeronautical Engineers as the body to control model aeroplane competitions; the appointment to be for one year, and to be reconsidered at the end of that period." Apropos this reference, we may mention that on Friday, December 15, Mr. W. E. Evans is lecturing on "Wood," at the headquarters of the S.M.A.E., 20, Gt. Windmill Street, Piccadilly, W.1, and on the following Sunday morning, December 17, members will

meet at the Windmill on Wimbledon Common, when an attempt will be made to improve upon existing British model aeroplane records.

\* \* \*

### Coloured Posters for the Exhibition.

The coloured posters, announcing the *M.E.* Exhibition to be held at the Royal Horticultural Hall from January 5 to 12 next, are now ready. The design is attractive and will we think be pleasing to the critical eye of the public. We shall be glad to send a few to any of our readers who could display one or more in any suitable situation at their works, their school, in their shop window, or other prominent position.

\* \* \*

### Models at Chester.

The third annual exhibition of the Chester S.M. & E.E. will be held in the Old Palace, Chester, on Saturday, December 16, 2 to 10 p.m. A variety of models will be exhibited, and special features of the show will be the working models and the wireless section. Demonstrations in the reception of wireless telephony and telegraphy will be given by means of the club's seven-valve set. Refreshments will be obtainable, and an orchestra will be in attendance. There will be no charge for admission.

\* \* \*

### Scientific Novelties at King's College.

A scientific novelties exhibition in aid of the Combined Hospitals' Appeal is to be held at King's College, Strand, W.C.2, from December 28 to January 10 next. It will be open from 2 to 5 p.m. and 6 to 9 p.m. Popular lectures delivered by many well-known Professors will be a feature of the show, whilst experiments and demonstrations illustrating modern discoveries concerning liquid air, wireless, X-rays, microscopy, electric welding, sound and music, colour photography, are being arranged. Tickets for children under 16 will be 1s. and for adults 2s. 6d. in the afternoon, and