

itself served as a model from which a second matrix was made; and since, in casting, there is a certain amount of contraction in the metal, copies made at a later date are of smaller diameter. This fact enables us to judge of the relative distance of copies from originals. It is a well-known fact that the majority of Renaissance medals in our collections to-day are not first-hand products, that is, made in the artist's own atelier and touched by his hand, but are products either of the artist's contemporaries, or of later generations. These older castings are often done in excellent style, and are easily distinguishable from the more modern copies of the XVIIIth and XIXth centuries.

The first medal, which, though undated, is the earliest of the Renaissance series, is that of John VIII Palæologus, the Byzantine emperor, which was made in 1438 or 1439, by Vittore¹ Pisano, or Pisanello, of Verona (1397–1455). The medal was made when the emperor was in Italy attending a church council at Ferrara. The obverse represents John Palæologus in the tall, pointed hat worn by the Greek emperors, with beard and curls, and bears the following inscription: $\text{IΩΑΝΝΗC} \cdot \text{ΒΑCΙΛΕΥC} \cdot \text{ΚΑΙ} \cdot \text{ΑΥΤΟ-ΚΡΑΤΩΡ} \cdot \text{ΡΩΜΑΙΩΝ} \cdot \text{Ο} \cdot \text{ΠΑΛΑΙΟΛΟΓΟC}$ ("John Palæologus, King and Emperor of the Romans"). The reverse shows the emperor on horseback riding along a stony road and pausing in an attitude of devotion before a wayside shrine. His page is seen in a characteristic pose of this artist, much imitated by his admirers and followers, foreshortened from the rear. The horses are of a heavy breed, and the gait of the emperor's horse, which is the amble, is correctly given. The inscriptions—in Latin, $\text{OPVS} \cdot \text{PISANI} \cdot \text{PICTORIS}$, and in Greek, $\text{ΕΡΓΟΝ} \cdot \text{ΤΟΥ} \cdot \text{ΠΙCΑΝΟΥ} \cdot \text{ΖΩΓΡΑΦΟΥ}$ —designate the medal as the "work of Pisano, the painter." The medal measures 102 mm., and is cast and lightly chased. The subject is treated in a broad style, the relief just sufficiently high to accord with the size of the medal, and the disposition and lettering of the inscription are pleasing.

The names of other great Italian artists, painters, sculptors, and goldsmiths who, inspired by Pisanello, produced that glorious series of noble works known as the Italian Renaissance medals are well known to art lovers. Matteo de' Pasti, Giovanni Boldù, Sperandio, Gianfrancesco Enzola, Francesco Laurana, Leoni Leone, Jacopo da Trezzo, and Benvenuto Cellini are among the most famous. In Germany also portrait medals in Renaissance style had a great vogue.²

¹ Recently discovered documents prove that his name was Antonio, and that he was born in 1397.

² In its development in other countries, the medal was subject to various special influences, such as that of seal-engraving in Belgium and the coin in France.



Medal of John VIII Palæologus.

This medal belongs to the collection of Mr. J. Pierpont Morgan, through whose courtesy we are permitted to illustrate it.

When, however, the taste for medals was more widely diffused, the modeling and casting process gave way to the striking process. Gradually the methods for striking coins were improved; the balancier or screw-press accelerated the transition from manual to mechanical methods, and as early as the second half of the XVIIth century the striking of medals of large dimensions was common. We even hear of medals struck by machinery as early as the time of Vittore Gambello (1460–1539), who was the first modern artist to engrave dies and strike medals of comparatively large size and high relief.

In the XVIIth and following centuries, the striking process largely supplanted the casting, though the latter continued to be sparingly employed.



Medal of Charles II of England, repoussé.



Medal of Charles Rabenhaupt of the Netherlands, 1672, niello engraving.

The artist was enabled to multiply copies with greater rapidity in the former way, and a more clear-cut image and greater circularity were attained.

In addition to the processes above described, other techniques or modifications were introduced. In Germany and elsewhere medals were cast in separate pieces and then chased minutely. The two pieces were then fastened together with a rim. In the Netherlands during the XVIIth and XVIIIth centuries a thin plate of metal was beaten up into relief for the two sides of the medal in the embossing or repoussé technique.¹ Engraving or niello work on a flat surface was an occasional technique. Some of the medals by Simon Passe (early XVIIIth century), which have the appearance of being

¹ Such embossed and chased medals were made by Peter van Abeele and O. Müller of Amsterdam.

engraved, were struck from metal dies which were engraved with very fine lines. A reappearance of this technique in modern times is seen in the medal recently issued by the Hollandaise-Belge Société.¹

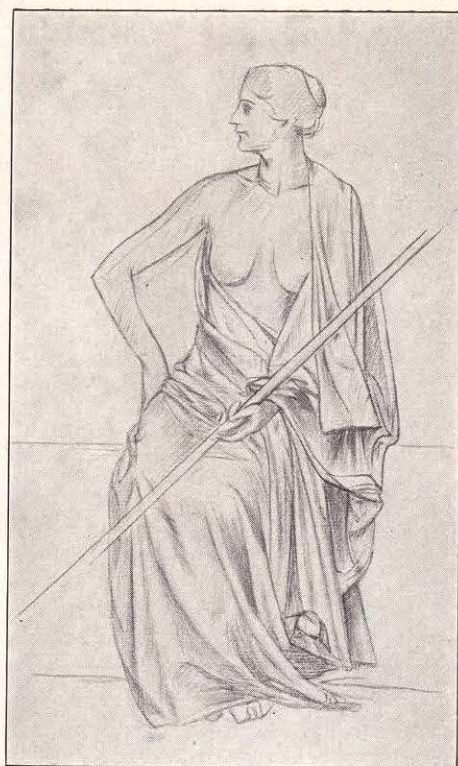
In Germany, Albrecht Dürer and Johann Schwartz of Augsburg produced cast medals from boxwood or Stechstein models which they cut by hand. In the Lanna Collection² were a number of these rare wooden models which served as matrices for the great portrait medals of the XVIIth and XVIIIth centuries. These had been carefully preserved, and some of them were painted and gilded. This technique has been revived by modern artists, notably by Paul Sturm, who cuts models in Solnhofer stone. A complete treatise analyzing in detail all techniques has not yet been written, but such a work would contribute largely to our scientific knowledge.

The striking method became everywhere the favored process, and this fact has a large bearing on the art history of the medal. With the perfecting of mechanical aids in striking, a mathematical exactness otherwise impossible was secured, but this was accompanied by a certain hardness of outline, dryness of treatment, and monotony in place of variety. Certain traditions in regard to the disposition of the inscriptions—a rigid formalism—arose, so that in the course of time, particularly in the XVIIIth century and the beginning of the XIXth, the splendid artistic quality which the medal had in its naissance and early period was completely lost. This was due to the fact that convention got the upper hand, so to say. "Classicism"—by which is meant the adherence to the grenétis, or row of dots about the type, imitated from ancient coins; the high rim; the polished background and inner circle; the stereotyped form of the inscription—was prescribed. All such formalism, proper enough in its inception, chills the soul of poetic imagination. The reverse of the medals showed a woeful lack of artistic spontaneity. An inferior and obvious treatment of both sides of the medal became their disheartening characteristic.

The modern reawakening or renaissance of the medal is identified with the name of Hubert Ponscarne (1827–1903). In his medal of Joseph Naudet, in which he has been hailed as the forerunner of the modern school, Ponscarne broke away from the traditional treatment and set a new standard for the medal. After Ponscarne came Chaplain, the great por-

¹ A klippe-shaped plaque, "The Glory of the House of Orange-Nassau," by F. E. Voet. Cf. W. Zwierzina, Een geslagen Niello-Penning, *Tidschrift voor Munt- en Penningkunde*, 1910, p. 209.

² Sammlung Lanna, Pt. III, Prague, May, 1911. In this same collection were models or moulds in Kelheimer and Dambrett stone, and even the original wax models used by XVIth-century artists.



Original Sketches by O. Roty.

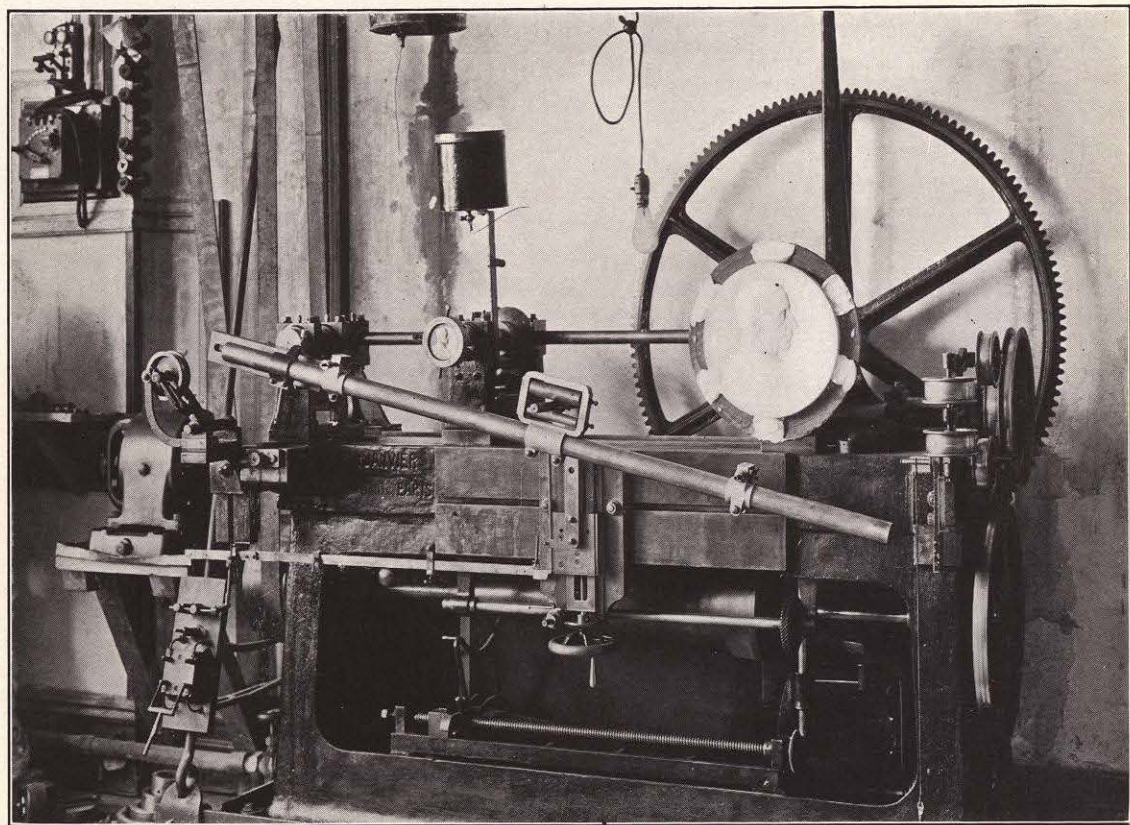
traitist; Roty, the master of *delicatesse* and sentiment; and Charpentier, the first to apply the technique of the bas-relief to the medal. With these names are associated a brilliant list of medalists, many of them distinguished sculptors and painters, who in France, Germany, Austria, and elsewhere have raised the modern medal once more to the plane of a fine art.

Closely connected with the modern revival, though not as a sole primary cause, is the invention of the machine for engraving the die, which renders the long and difficult apprenticeship with the burin superfluous. Before the invention of Contamin, about 1840, the artist was obliged to engrave or cut the design of his medal on a soft steel block or die, working from a drawing or a model in wax. The dies were then hardened and placed in a hydraulic press, and the medal struck from these dies.

By the reducing-machine process the medium of the artist is no longer the steel. After a sketch of the head, figure, or group has been designed on paper, the artist proceeds to model his design in soft wax (plastilino is the favorite kind), placing it bit by bit on a slate, and building it up as a sculptor works on a bas-relief. This wax model in rectangular or circular form is often as large as fifty centimeters in diameter. From the wax model a plaster cast is taken in negative, and from this in turn a positive casting in iron or bronze, or a galvanoplastic reproduction, is obtained. This large metal model is then placed in the reducing-machine, and the whole of the concluding process thereafter is mechanical.

The reducing-machine is an application of the principle of the pantograph. The construction of this machine is based upon the fact that the farther a point is located from the center of a wheel, the longer the path it travels as the wheel revolves. The most conspicuous part of the machine is a freely moving beam fastened only at one end, and counterbalanced by a weight at the other end. On this beam, near the free end, is located a tracing-point. A very sharp metal casting of the original wax model is placed under this point and kept revolving. The tracing-point continually touches the casting, gliding over all its raised surfaces and depressions in a very close spiral line, starting from the center of the cast and working outward toward the rim. Nearer the fixed end of the beam is a second steel point, the cutting-point or fräser, which is revolved very rapidly by an electric motor. This cutting-point, guided by the tracing-point, cuts or engraves on the soft steel block an exact copy of the original cast model, but in reduced size.¹ The closer the fräser or cutting-point is placed to the fixed end of the

¹ The best results are obtained when the reduction is made in a proportion not greater than 6 to 1—preferably 5 to 1, or 4 to 1.



Reducing-Machine—"Janvier" Model. (The Medallie Art Co., New York.)

beam, or the center of the wheel, the smaller is the diameter of the reproduction on the steel block. This block shows the medal or plaque in the reduced size desired, but, like the original, in relief or positive, and is designated the patrix, or more popularly the "hub."¹ The soft black must be subjected to a hardening process. It is thereupon fastened in a friction screw-press, and, by repeated blows, whose force is equal to a weight of 250,000 kilograms, the patrix is stamped upon another soft steel block which receives the impression in intaglio or negative. This second block, designated the matrix or die, is likewise hardened. The die is then handed over to the artist or skilled engraver for examination, its details are carefully studied and proved, an impression in lead is taken, and the die is ready for the press—the final step of striking.

The reducing-machine makes it possible for any artist who can model to produce a medal. A sculptor or painter may engage in this work as a branch of his activities. Roty himself declared that he had never gone through the severe training of engraving the die, and could not have executed any of his medals without the reducing-machine. We still hear of *écoles de graveurs*, and *Gravier-schulen*, and many medalists style them-

¹ The die may, of course, be made first, and the hub obtained from the die; this is always done as a precaution against the breaking of the dies in striking.

selves "graveurs en médailles," but the fact is that the reducing-machine is to-day the engraving agent almost exclusively employed in the actual cutting of the dies. Its advantages are undeniable, and to its invention we owe the delicate low relief with its manifold gradations which give perspective, atmosphere, and grace. The artist, once more as in the days of the Renaissance, lovingly and genially transmits his warm creative impulse through his finger-tips. Plastic form is created in his mind's eye, and takes shape under his obedient hands. Painters may introduce the pictorial element into a struck medal. Impressionism in both the sculptors' and painters' meaning may be applied to the struck as well as to the cast medal.

A protest has, however, been raised, chiefly by the Germans, against the entire abandonment of engraving by hand. Dr. Georg Habich¹ argues that the reducing-machine takes away from the strength which lies in a clearly expressed technique. This result Dr. Habich regards not as inevitable with all artists, but as a peril to which many succumb. There is, no doubt, a danger in the complete freedom which the reducing-machine affords the modeler, but the great advantage of the gradual shading off of the figures into the background is an undeniable artistic benefit not possessed by the graving-tool and steel medium. The observing critic will note many cases where reduced medals show a summary treatment of details and inadequate modeling. These faults are due to an abuse of the freedom afforded by the machine, which relieves the artist from the necessity of executing in the actual scale of the piece produced. Certain German medalists, notably Georg Reimer, Max Dasio, and Fritz Hörnlein, take an extreme position. They claim that the contemporaneous art is full of artificialities. They scorn the *delicatesse* of the French artists as tricky minutiae, and regard the reducing-machine as a mechanical invention, typical of an age of machinery, which will be as fatal to the medallie art as mechanical methods have been to wood-carving. These artists believe that the work should be executed in the actual size of the projected medal, since only in this way can the freshness of the original conception be retained. "Whoever," it is urged, "has analyzed the great effect attained in the small diameter of an ancient Greek coin, will understand what the working in the actual size and proper proportions means for the inner balancing of the composition." Hörnlein believes firmly that only by reverting to the die-cutter's art is any advance possible in the future development of the medal.

Whether the reducing-machine, which has during the last half-century

¹ *Neuere Entwicklung der Medaillenkunst, Kunst u. Handwerk*, Pt. VII, 1906, Munich.