An Early Investment Casting in Platinum

A CONTRIBUTION TO MODERN ART AND CRAFTSMANSHIP

Lost wax casting, a simple and accurate method of casting pieces of complex shape and of reproducing fine detail, has a history of almost five thousand years. The earliest example so far discovered by archaeologists, a miniature group in copper of a chariot driven by a Sumerian king and drawn by four wild asses, was found in an ancient temple in Mesopotamia and dates from about 2750 B.C. The process was used successfully by the ancient Egyptians and Greeks, by the Etruscans, by the Chinese in the fifth century B.C., and later by the native Indians of South and Central America.

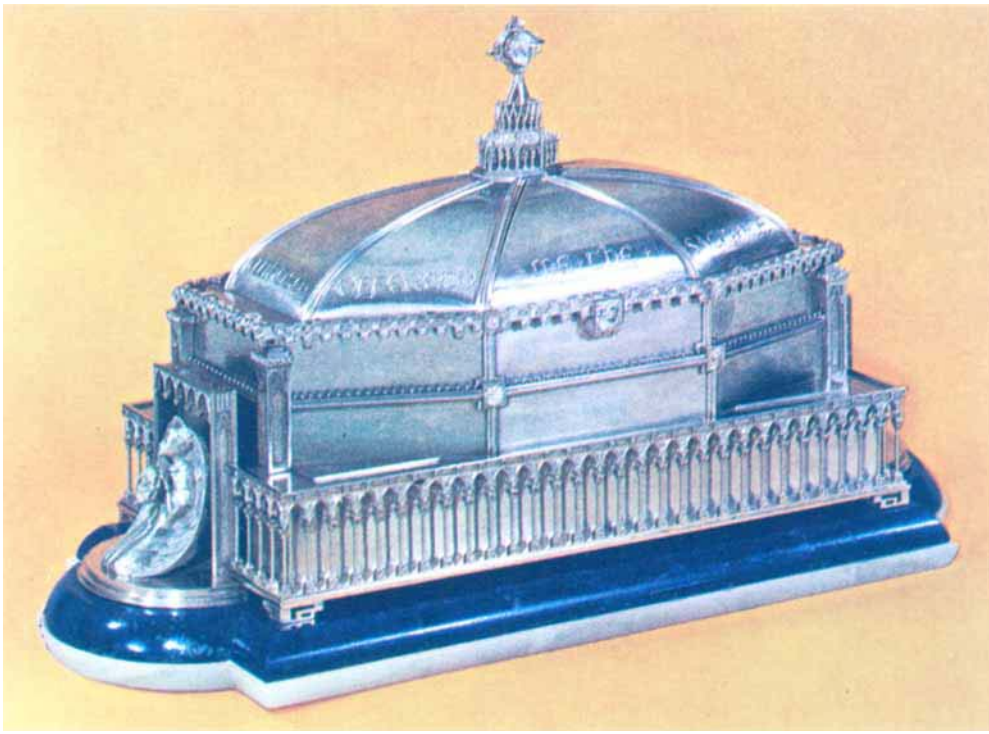
This very old technique, in which the wax model or pattern was melted out of a clay mould, leaving a cavity into which molten metal was poured, had, however, one major disadvantage—only a single casting could be made from one pattern. In this respect its modern version, investment casting, is essentially different from the old one-off procedure. It was in 1934 that a Danish engineer, Thoger Gronborg Jungersen, working with a firm of manufacturing jewellers in Toronto, devised the flexible rubber mould from which any required number of identical wax patterns can be obtained. This made it possible to produce substantial quantities of small castings possessing all the fine detail of the original master pattern.

This development enabled such castings to be produced rapidly and economically in gold and in silver, but the very high melting points of platinum and its alloys presented many difficulties. Modern melting processes and improved refractories, together with the development of more suitable alloys, eventually established the process for platinum, while in more recent years improved quality rubbers have become available as well as a wide range of casting equipment. Quantity production of platinum castings can thus now be undertaken from a single master pattern.

In the July 1978 issue of *Platinum Metals Review* an account was given of a lengthy research programme recently carried out by Johnson Matthey to provide more suitable alloys and to improve still further the efficiency of the process for platinum, but this note is concerned with one of the earliest and most difficult platinum castings ever to be made.

In the same year, 1934, the Goldsmiths and Silversmiths Company of London and their designer, Mr. Cyril Worsley, were approached by a Mrs. Robinson-Harrison of Cumberland who wished them to design and make a precious object, a thing of beauty but suitable for use in a cathedral, in which were to be incorporated the jewels given to her by her late husband, the whole to express her gratitude for life. Eventually a platinum casket was decided upon, fitted with six hundred precious stones, and with the figure of an angel holding a large diamond kneeling within a niche at each end. The completion of the box took two years of skilled craftsmanship, but the greatest difficulty was encountered with the angels.

Now immediately after Jungersen's process had been devised work was begun in the Johnson Matthey Research Laboratories, under the late Mr. H. E. Bennett, to investigate its possibilities for the casting of platinum, and before long an approach was received from the Goldsmiths and Silversmiths Company. Although the equipment and resources available at that time were stretched to the limit, suitable castings of the two figures were produced, the largest articles ever cast in



The Canterbury Treasure, presented to Canterbury Cathedral by Mrs. Robinson-Harrison in 1936. It incorporated some six hundred precious stones and needed two years of skilled craftsmanship to complete, but the greatest difficulty was presented by the designer, Cyril Worsley, calling for the figure of an angel kneeling at each end of the casket. These were eventually made in the Johnson Matthey Research Laboratory in the very earliest days of the modern investment casting process and were among the first, and were certainly the largest, objects to be cast in platinum by this method. The unfinished casting of one of the angels is shown on the right

platinum, to form part of an historical piece of modern art and craftsmanship.

The casket was accepted and dedicated by the then Dean of Canterbury Cathedral in November 1936 and for many years served to hold the wafers for Holy Communion. In 1977, on the instructions of Mrs. Robinson-Harrison's family, it was sold at Sotheby's for the benefit of the Cathedral Appeal. The total weight of platinum was 76 ounces, the largest piece of platinum fabricated for ornamental purposes. L. B. H.