

POMPEIIAN SILVER WARE.

BY THE PARIS CORRESPONDENT OF THE SCIENTIFIC AMERICAN.

The Naples Museum contains a number of very handsome silver pieces which come from Pompeii and Herculaneum. Some of the most remarkable of these are illustrated here. Conspicuous among them is a large vessel of bucket form with a movable handle. It is decorated with a relief design representing the interior of the Baths, with four female figures in different attitudes. On either side is an incense burner, consisting of a richly-ornamented silver vessel, of cup form, supported upon a four-footed bronze support. The latter is, however, of modern workmanship and is intended to replace the ancient tripod, which is missing. These two pieces are practically alike. The cups show a high order of design, and are ornamented with festoons and foliage, set with small garnets. Among the most remarkable specimens of silver found at Pompeii are four vases of two-handled calice form which are shown here. They were known as *scyphæ*. These cups are decorated with bas-reliefs representing centaurs and bacchic symbols. A double bottom or lining is provided in the interior of the cup, in order to prevent the sediment of the liquid from depositing in the cavities of the reliefs. Under the base of one of the vases is engraved the name *SOSINI LAPPI*. These specimens measure 5 inches high and somewhat less in diameter.

Between the two above-mentioned vases on the top row will be observed a fine specimen in the shape of a mortar, decorated with a well-executed relief design representing the Apotheosis of Homer. Here we have the great poet, with the head partly veiled, clothed in the *vestis talaris*, and seated upon an eagle which is bearing him to the celestial regions. On one side (which is visible here) we see a warrior with his head resting upon the right hand and holding a sword and a steering oar, representing the Odyssey. The pendant on the other side represents the Iliad by a similar figure armed with the sword and lance.

Another specimen in the form of a mortar, lying just below the former,

three specimens below are cups of different forms ornamented with leaf designs.

A New Bone-Treating Process.

Various patents have recently been issued to Joseph R. Hunter, for processes for the treatment of bone and methods for utilizing the products of these processes.

Patent No. 781,883 covers a process of treating bone. In this process the bone is freed from mineral matters, particularly phosphate of calcium. Preferably, fatty matter and moisture are also removed. This may be done preliminarily or at the same time as the removal of the mineral matter. The bone is washed and cut up for convenience in handling, and to make all parts easily accessible to the treatment. It is then placed in a vessel containing an acid in solution, which will combine with the calcium to form compounds soluble in water.

The percentage of acid to be used is preferably relatively small, but varies slightly according to the acid, the character of the bone, whether fresh or dead,

rubber is combined with finely-divided bone or "ossein" in the form of fibers, produced by the process above described.

Patent No. 781,884 covers a product from ossein. The bone is treated as described in the Letters Patent No. 781,883. The ossein has a tendency to shrink or collapse transversely of the length of the cells. The ossein is compressed while in this condition—that is, before the walls of the cells have returned to their condition of rigidity—to collapse the cells, elongating at least one axis thereof, and the cellular structure "sets" in the compressed position. The ossein is most advantageously compressed for various purposes into sheets or blocks.

Patent No. 781,880 covers a product from bone. The bone is treated as described above. The fibers after leaving the refining engine are pliable and soft and have a ragged body caused by the projection of small filaments or particles therefrom as in the case of wool. This product may be felted or woven to advantage. This material is a non-conductor of heat and of electricity, is impervious to moisture and substantially fireproof.

Patent No. 781,882 covers a compressed product from bone. This is similar to the patent No. 781,880, just mentioned, the difference being that the fibers are compressed into blocks or sheets without the use of an agglutinant.

The 5,000-Kilowatt Steam Turbines for the St. Denis Power Plant.

In a power plant in course of construction at St. Denis, four steam turbines of 5,000 kilowatts each are being installed by Messrs. Brown, Boveri & Co. Each turbine, which can give up to 6,000 kilowatts, turns at 750 R. P. M. and is worked at the inlet valve under an excess pressure of 12 atmospheres and 360 deg. C. maximum superheat. In the condenser the vacuum should not fall below 90 per cent. Provided the turbine works under these conditions, the consumption of steam is not to exceed 6.8 kilogrammes per kilowatt-hour. This figure has, however, been chosen rather high, and it is thought quite certain that tests on delivery will give far better results.



Scyphæ or Vases and Cups.



Plaques and Vessels.



Bucket and Incense Burners.

ANTIQUE SILVER WARE FROM POMPEII AND HERCULANEUM.

is ornamented with a relief representing a combat between Theseus and an Amazon. In the upper row is a shallow cup with a well-executed design representing Minerva mounted upon a chariot drawn by two horses. The owl, which is consecrated to the goddess, is sitting in front of the chariot upon a wand or lance. The remaining figure in this group is a censer or perfume-burner, which carries a perforated cover and a chain for swinging it. The interior is entirely preserved from oxidation.

The circular plate which is observed in the middle of the second engraving is used to form the back of a mirror. The design represents a female figure seated, with the head thrown back. She is sustained by a second draped person in the rear. Another female figure and a Cupid are placed in front of the group. The composition is said to represent the death of Cleopatra. Two intertwined serpents form the handle of the mirror. On either side of this specimen are two plaques in high relief representing Apollo and Artemis. The figure of Apollo is especially well preserved. The

and the temperature at which the process is carried out. The most suitable temperature in the case of hydrochloric acid is in the vicinity of blood-heat. The fiber remaining from the acid treatment, ordinarily termed "ossein," is then washed thoroughly and the acid removed by churning or working in the water or in a solution of sal-soda. Any objectionable color of the fiber may be removed by bleaching with peroxid of hydrogen. The ossein is preferably kept wet until the process is complete, but may be moistened if it dries too much. From the soda-washing or from the bleaching process the bone is put into a beating-engine and thoroughly beaten. This breaks the fiber up somewhat, but the division is preferably completed in a refining or Jordan engine to the fineness required for the desired purpose.

Patent No. 781,881 covers a filler for rubber, the object of which is to reduce the weight of the product, the filler at the same time being non-inflammable, a non-conductor of electricity and heat, impervious to moisture, and little affected by ordinary acids. The

Each turbine has been fitted with a surface condenser, the air and circulation pumps of which are operated by a direct-current motor, and is direct-coupled with a 5,000-kilowatt generator, supplying alternating current at 10,500 volts with 25 cycles. Each such set is provided with a steam-operated oil pump, supplying oil to the various parts of the set.

The four turbo-alternators are excited by a 300-kilowatt direct-current turbo-dynamo rotating at 2,700 R. P. M., which is likewise fitted with a surface condenser. The tension is 200 volts. In addition there are two motor generators of 375 kilowatts each to be installed, to supply part of the excitation current.

There is further provided a battery of Tudor accumulators of 1,300 amperes-hours, to operate the steam-boiler feeding pumps and to supply the exciting current in case the plant, after having been out of service, is to be operated again.

For motor-car power transmission, a roller chain greased with suet gives 94 per cent efficiency.