Correspondence.

The Largest Floating Dock.

To the Editor of the SCIENTIFIC AMERICAN:

In the issue of your valuable paper of September 24, you publish an article under the heading "The Largest Floating Dock in the World," accompanied by an illustration of the new pontoon dock of the Vulcan Company, of Stettin, Germany, the dock you have reference to.

Permit me to say that this is not correct, as there is a still larger floating dock in existence, namely, the one built by Messrs. Blohm & Voss, Hamburg, Germany, which has been in use at their yard for over a year and a half.

In comparing the capacities of these two docks, you will at once notice the considerable difference in favor of the Blohm & Voss dock, the dimensions of which are as follows:

Length	560 feet.
Breadth	88 "
Depth over sill	30 "
Draught of water	47 "
Freeboard	4 "
Lifting power	17,500 tons.
Time for lifting maximum load	1 hour.

Such steamers as the "Pennsylvania" and "Pretoria" have been lifted by this dock.

New York, September 28, 1898. C. P. O'SWALD.

Collectors for Wimshurst Machines.

To the Editor of the SCIENTIFIC AMERICAN:

Much as has been written concerning the Wimshurst machine and its several parts, the subject of collectors seems to be neglected.

For machines with sectors, the ordinary U-shaped collecting combs with numerous points seem to serve as well as any other form, but with sectorless machines there is a wider field open to research.

Some nine months ago two Wimshurst machines were built for experimental work, which have been in use almost ever since, one being made by myself and the other by Homer Bretz, an amateur electrician, of this city. My machine had two varnished plates of window glass 14 inches in diameter and ⅛ inch apart. The other machine had two similar plates, being different only in size, as they were 13½ inches across and $\frac{3}{16}$ of an inch apart. Both are of the uninclosed type, and were designed especially for experiments with the brushes and collectors. The 14-inch machine had sectors and the common U form of collectors. The Leyden jars were small in comparison with the size of the plates, being designed to give short sparks quickly following one another. The other machine was sectorless and had larger condensers, the sparks being larger and at greater intervals of time.

The sectors were removed from the 14-inch machine soon after completion, and the output of current was slightly increased in consequence. The collectors were next removed and a single point for each pole was presented to the face of the front plate, with a result that the output was still further increased, a 4-inch spark being readily obtained.

On the smaller machine the collectors were also removed and a thin steel wire, about 1½ inches long, was inserted between the plates at the place where the combs had been, and each wire was connected to the discharge rod at its own side of the machine. The result was past all expectations. A 6-inch spark was readily obtained, and they followed each other across the air between the discharging rods fully as fast as the 4-inch spark had formerly done.

My machine was again changed to the interplate collector, with equally satisfactory results. On account of the design of the machine, 4½ inches is about the limit of the length of the spark, but with the present collector the rate of discharge is greatly increased.

A sectored machine was tried with the interplate collector, with but little change in the length of the spark, as compared with that obtained from combs.

Later a Wimshurst machine with vulcanite plates was stripped of its sectors and provided with collecting rods placed between its plates, but it failed to excite. The strongest argument in favor of the interplate collector, aside from its high efficiency, is its extreme simplicity.

In a number of experiments on different machines, under widely varying conditions of weather, this form of collector proved its superiority over the comb collector. DAN MCNAUGHTON.

Charlotte, Mich., September 23, 1898.

AT the recent meeting of the Association Française pour l'Avancement des Sciences, M. P. Villard presented a communication upon the regenerative action of light on fluorescent screens of platinocyanide of barium. It is well known that when these screens are exposed for a long time to the action of X rays, the salt darkens in color and the fluorescence of the screen diminishes. According to M. Villard, an exposure of the screen to direct sunlight for fifteen or twenty minutes completely restores its properties. The infra-red rays in sunlight seem to be the most active in the work of regeneration. A practical suggestion is that such screens should be kept exposed to daylight, their properties being thus indefinitely preserved.

The Gondola: Its History and Manufacture.

In Mr. Horatio F. Brown's "Life on the Lagoons" there is an interesting account of the history and manufacture of the gondola, from which we condense the following:

The earliest authentic document relating to Venice is a letter by the secretary of Theodoric, in which is noted the light boats which were used by the Venetians, and which were tied like horses at the doors of their houses. It is certain that the early boats were unlike the modern gondola, and this word does not occur until the twelfth century, and its derivation is still an open question. It is generally believed, however, that it is derived indirectly from the Latin and Greek names for the boat in which Charon ferried souls across the Styx. To this day the passenger across a Venetian ferry lays his "obol" on a gunwale of the gondola, much as Charon's ghostly fares were wont to do. The earliest pictures of the gondola, or rather its immediate predecessor, date from the fifteenth century only. The next two centuries, the sixteenth and seventeenth, were the great period of Venetian magnificence and pomp, and the gondolas shared in the movement. For this period we have abundant evidence in the pictures in the Academy and in the Ducal Palace. The paintings of Gentile Bellini and Carpaccio contain many excellent views of gondolas of the time, and from them we see that the period of sumptuous development of the gondola was about to begin. The boats were covered with fine stuffs, embroidered in patterns of bright colors, and were open on the sides, giving shelter at the top only. The adornment of the canopy was the point of departure for the excessive luxury which gave rise to sumptuary laws. At the close of the sixteenth century the form of the gondola underwent a great change and approximated its present construction. The massive steel "ferro," or prow, which is, perhaps, its most striking feature, was added at this time. Various reasons have been suggested to explain the adoption of the "ferro," but the matter has never been satisfactorily cleared up. It is said by some that the "ferro" was introduced as a measure, in order to allow a gondolier to judge whether he could pass under any particular bridge. If the "ferro" passed, he knew that the gondola with its canopy could also go under without striking. Others maintain that the "ferro" at the bow acted as a counterweight to the rower behind, but this theory is destroyed by the fact that the earliest "ferri" were attached to both bow and stern. It is probable that the "ferri" were added for adornment and nothing more. The "felze," or canopy, became richer and richer, which caused the sumptuary magistrates to issue many decrees against them. Finally the use of color was tabooed and only coarse black woolen stuff was allowed; all carving and gilding were forbidden, and all of the metal work had to be perfectly plain. The government experienced the greatest difficulty in enforcing these regulations, for the nobles had a mania for display. One result of these laws remains to this day in the somber black which universally characterizes the gondola. Foreign ambassadors were alone exempt from the stringent decrees against color and decoration, and they availed themselves of their privilege to a remarkable extent. In the eighteenth century the gondola underwent its final modification and assumed the form which it now possesses. The ferro at the stern disappeared, and that on the bow was broadened into the hatchet head of the modern gondola which we know so well. The vessel was lengthened to gain speed, and the "felze" received its door and glass windows. In short, the type of gondola was fixed by the year 1740.

The trade of making, cleaning, and repairing the gondolas is active in Venice, and it is very easy to visit their open sheds and yards on the border of the city. In front of the shed a long slope leads down to the water's edge. This is well plastered with mud so as not to injure the boats when they are drawn up or lowered into the canal. A pitch pot is usually burning in one corner, and the men move about swabbing on the pitch and drying the same by burning piles of loose straw beneath the boats. The first thing to be done in building a gondola is to choose the wood of which the boat is to be made. It must be well seasoned and free from knots. These points are more essential in the gondola than in the case of other boats, for the planks of which they are made are so thin that they are liable to warp and the knots to become loosened and start.

When the wood has been chosen, the builder begins to lay down the gondola; four posts determine the length and width. The operation of building begins by setting up the stern and bow posts, which are made of oak. The ribs, of walnut, cherry, or elm, are then laid down. They are flat at the bottom, for the gondola is a flat-bottom boat, and the rounded uppermost ends of the ribs are joined together by a binder of oak. At the points where the bow and stern decks are to begin, two bands of walnut, rising in the middle, run across the boat from one binder to the other and act as a counter support to the ribs, which may otherwise be pressed in by the strength of the binder. When this is finished, the hull of the gondola, as far as its strength and structure lies, is complete. It remains to add the walls of pine and the bottom, which is likewise of pine. The floor rests upon ribs and protects the bottom, which is too delicate to bear treading upon without danger of starting. The deck used to be made of walnut, but now pine is usually used. The deck is divided into four compartments on each side by thin strips of carved or beaded wood. A little door closes the deck in front and makes the boat a safe place for the storing of the gondolier's possessions. Two steps in the bow permit of an easy embarkation or landing. The rowlocks and the foot rests are added, and here the gondola builder ceases his labors. The rest of the fittings are bought elsewhere. So far the gondola will have cost about $60.

The iron finishings for the bow and the stern are then bargained for at some smith's shop and made separately. Every part of the beak of the bow has its own name. Unfortunately, hand labor is being superseded in Venice, as elsewhere, and the handsome wrought iron ferros have given place very largely to cast iron substitutes, which are heavy and brittle, but the profession of a gondolier is in most cases hereditary, so that an old ferro is possessed by almost every family. The price of the "ferri" for the bow and stern is about $20, which brings the cost of the boat up to $80.

The boat is now ready to navigate the canals, but in order to fit it to carry passengers, the "felze," or little house in which the passengers sit secure from wind and rain, must be added. The mountings of the "felze" are of brass, and the cost of the whole is not far from $100; so that it is seen that the boat is rapidly increasing in expense. The "tenda," or summer awning, is a modern device, and is quite popular with tourists, but the more conservative among the Venetian families are slow to adopt it. The carpet, cushions, and the arm rests must be added to the cost, which amounts to about $40, so that the entire cost of a new gondola is not far from $220. The young gondolier just starting in life is not likely to have such a sum by him; so the practice is to pay down a certain amount at once and to discharge the remainder in monthly or quarterly payments.

When the gondola is new, it is left unpainted on the outside for the first year, as an intimation of its use and also as a sort of guarantee to any possible purchaser, for the value of the gondola falls immediately after it is painted, for then it is impossible to ascertain the condition of the wood and the presence and absence of knots.

The gondoliers soon become devotedly attached to their boats, and they study their character and peculiarities; for it is a strange fact about this most extraordinary of boats that it has a character and temperament of its own, in spite of the fact that the boats are all built on the same model; and much of the gondolier's skill in rowing depends upon his knowledge of his boat. He spends hours every day in sponging, scrubbing, and drying his boat, and he soon knows every nail in its hull and every scratch upon its steel or brass. Mr. Brown tells of a gondolier who identified, swore to, and recovered a pair of sea horses, which formed a part of the ornamentation of his boat and which had been stolen from him, on the strength of certain almost invisible scratches, which had escaped the notice of the thief.

With so much uncovered metal in the fittings of the gondola, it is, of course, necessary to keep these metals in a high state of polish, which occupies all the spare time of the gondolier. It may truly be said that the gondolier is known by his boat, and those who have lived for a long time in Venice are sure to glance at the "ferro" before picking out a boat, as this tends very largely to show the ability of the boatmen. Once every three months in the winter, and once every twenty days in the summer, the gondola must be hauled on shore, scrubbed, dried, and plentifully anointed with grease. This operation makes a surprising difference in the speed of the boat. The process of cleaning occupies a whole day, so that the gondolier not only loses a day's fares but has also to pay about 80 cents, which is a considerable tax upon him, considering the extreme smallness of the fare which he is allowed by law to collect.

If the gondolier attends properly to his boat, it will last in excellent order for at least five years. At the end of that time he can sell the hull for $20, and then take the rest of the fittings for a new boat, while the old gondola finds its way to one of the least frequented ferries, where it will do duty for another five years. It gradually loses its graceful curves and form as the woodwork fails, until at length it becomes a "gobbo," with its bows no longer sweeping up in a proud curve, but buried in the water; then its day is over. It is fit for nothing but to be sold, broken up, and burned in the glass furnace of Murano, the crematory of most ancient gondolas.