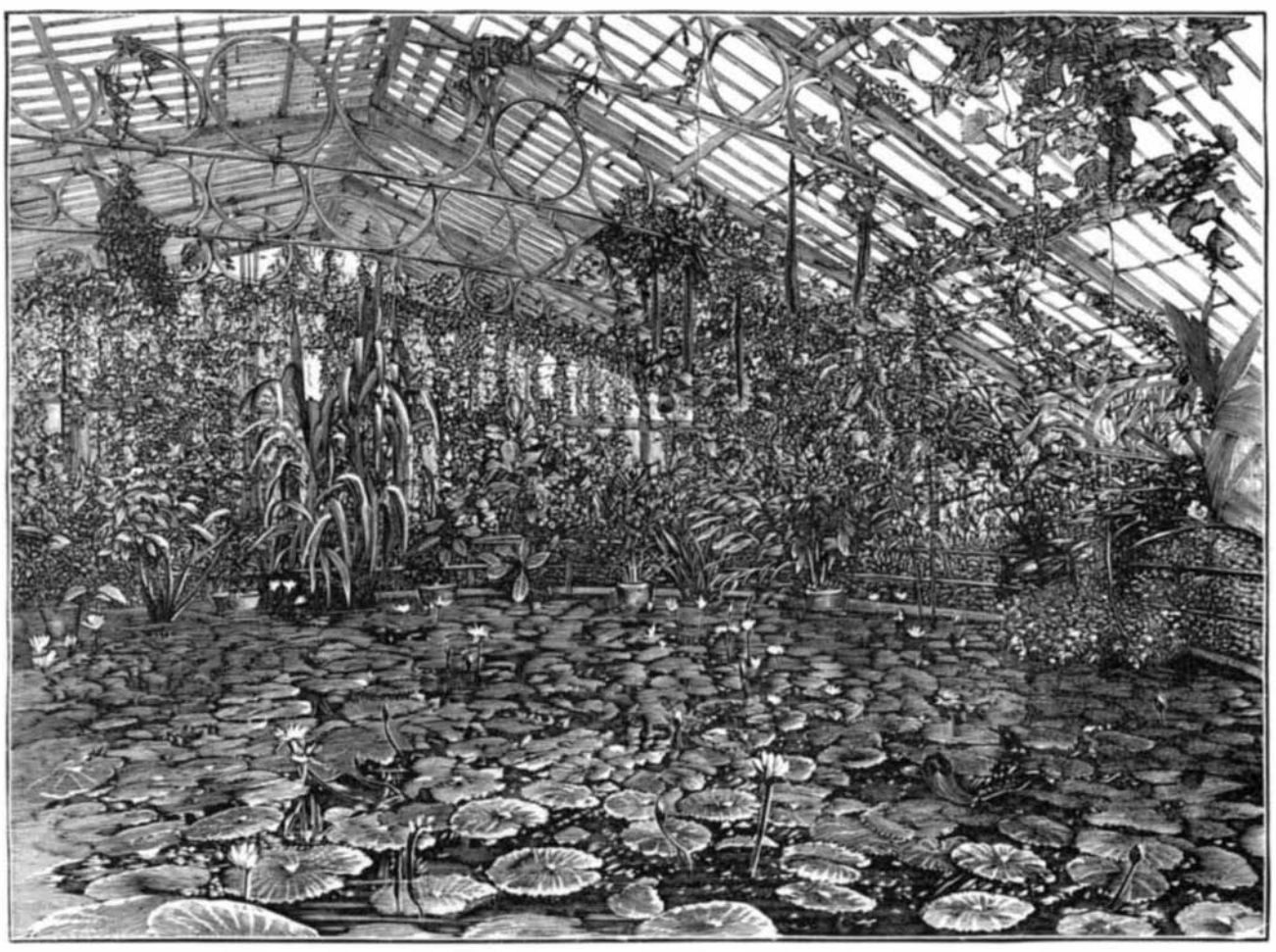
### THE WATER LILY HOUSE AT KEW.

This house, at the Royal Botanic Gardens, about six miles from Hyde Park, London, is at its best any time between the middle of July and the end of September. The Nymphæas occupy the whole of the large circular tank, with specimen plants of hedychiums, sugar cane, sagittaria, and clusia round the margin. The iron rail which encircles the tank is partly covered with the stems, leaves, and flowers of Batatas paniculata, and the narrow shelves against the sides of the house are covered with soil one foot in depth, in which a collection of tropical gourds is planted. The vine of the gourds is trained to wires running below the roof, and the effect of their large and sometimes bright colored fruits as they hang over the water lilies is particularly good. Along with the gourds grow such handsome flowering creepers as Solanum Wendlandii, the best of all tropical solanums, passifloras, ipomœas, Aristolochia elegans, A. ridicula, Clitoria ternata, Bignonia Tweedieana, Beaumontia grandiflora, Allamandas, etc. In tanks in the corners of the house are Nelumbiums, Cyperus papyrus, Amorphophallus campanulatus, and other large and remarkable moisture-loving plants. The collection of Nymphæas is a rich one, and we have counted, says the *Gardeners' Chronicle*, over a hundred expanded flowers in this tank on a July morning at about eleven o'clock, when the whole of the kinds are in "blow." Blue, purple, red, rose, white, and yellow colors are among them. The gourds comprise Luffas, including the Sooly Qua, L. egyptiaca, which has fruits five feet long, and which are shown in the picture; Lagenarias, such as L. gigantea and L. vulgaris, Cucurbita maxima, Cucumis sikkimensis, snake and adder gourds (Trichosanthes), the wax gourd, and numerous other kinds.



WATER LILY HOUSE AT KEW ROYAL BOTANIC GARDENS.

The house was built in 1853 for the Victoria regia, which was grown there until the present Victoria house was erected some twenty years afterward. Since then the "Old" lily house has been devoted to the Nymphæas, which do extremely well in it. Its dimensions are 44 feet square, with a porch on the south side. The roof is span, about 20 feet high in the middle, and the whole of the framework is of iron, resting on a thick stone base. It is an extremely light and, at the same time, a strong and elegant structure. The tank is circular, 36 feet in diameter, 2 feet deep, with a leaden bottom. Two rows of hot water pipes run through the water, and there are six rows of 4 inch pipes all around the sides of the house. The Nymphæas are grown in large pots, except N. zanzibarensis, which is planted in a circular brick bed in the center of the tank. The water is kept at a temperature of about 70° Fah. throughout the summer. The house is shaded with thin canvas blinds only in very bright weather in the middle of the day. These are, roughly, the essential conditions which produce the really delightful display of moisture-loving tropical vegetation represented in the woodcut.

### The Battleship Texas.

The progress made for the past four years in adding cruisers, gun boats, and monitors, or harbor defense vessels, to our navy, has been highly gratifying, and there is no room for doubt that the great body of the American people now look with exceeding satisfaction upon the highly efficient fleet of modern war vessels which we at present possess. The building of battleships proper, however, has been a slower work, such vessels, according to the most recent method of classification, being designed to carry guns of the heaviest caliber, and be protected by an armor which will resist the projectiles of similar guns on an enemy's vessels. The launch of the battleship Texas, therefore, at the Norfolk Navy Yard, on June 28, attracted wide attention, forming a subject of pleasant comment by the press generally throughout the country, without regard to politics, while the launch itself was witnessed by some twelve thousand persons.

The original plans of the Texas were made by English designers, but they have received so many successive alterations that but little has been left of the special features at first contemplated. She will be a steel-armored twin-screwed vessel, of 6,335 tons normal displacement, driven by two sets of triple expansion engines, capable of developing 5,800 horse power with natural draught and 8,600 with forced draught.

The vessel will be 290 feet long, 64 feet 1 inch broad, and have a mean draught of 22 feet 6 inches when carrying about 500 tons of coal, with a bunker capacity for 450 additional tons. The main armament will consist of two 12-inch breech-loading guns, each weighing 46½ tons, mounted in two turrets *en echelon*, one being on the starboard side aft, the other on the port side forward. The secondary battery will consist of four six-pounder and four three-pounder rapid-firing guns, with four 47 mm. Hotchkiss guns, all mounted on the gun deck behind 1½-inch plating, two Gatling guns, and two 37 mm. Hotchkiss guns, mounted on the bridge, the same in the military tops, and two three-pounder rapid-fire guns on the flying bridge. There will be six torpedo tubes, one in the bow, one in the stern, and two on each side; a strong ram bow adding to her offensive powers.

The turrets will be armored with twelve inches of steel and their bases inclosed by a diagonal redoubt armored with 12 inches of steel, which also will protect the hydraulic machinery for working the guns, and the smoke pipe casings. A belt of steel armor 12 inches thick, extending 2 feet above the designed water line, 4½ feet below it, and 116 feet in length, will protect the boilers and engines. A protective deck of 12-inch steel will be laid above the armor belt. Beyond this belt it will be inclined toward the extremities and sides, and will be 3 inches thick on the slopes. At the ends of the belt will be diagonal armored bulkheads of 6-inch steel, pointed toward the bow and stern, whose oblique surfaces will afford additional protection.

The hull is of steel throughout, and built on the cellular system. A double bottom extends under the engines, boilers, and magazines, and is divided both longitudinally and transversely into numerous watertight compartments. There are 129 of these compartments, all connected to steam and hand pumps by an extensive drainage system, thus minimizing the disastrous effects of the ram and torpedo. The boilers and engines are to be in six water-tight compartments below the protective deck, three on each side, with a central passage providing protective communication between the extremities of the ship. Above the turrets will be a flying deck for navigating the ship, on which boats are stowed. Two second-class torpedo boats will be carried in addition to the usual complement.

The ship will be lighted throughout by electricity, and will carry two powerful electric search lights and two smaller search lights for boat use. She will be used as a flagship, and will carry a complement of 368 officers and men, her spacious decks affording much greater accommodation and comfort for the crew than is possible on cruisers. Her machinery is being built by the Richmond Locomotive and Machine Works, of Richmond, Va., but will be placed on board at the Norfolk Navy Yard.

Aside from the delay in the construction of the vessel from the changes found necessary in her plans, far more time has been required for the work from the fact that the Norfolk Navy Yard, which was selected as the place of building, was but poorly supplied with the required facilities for the construction of so large a vessel. Large additions have, however, been made to the plant and equipment at this yard, thus affording additional facilities for the building and repair of war vessels in the future.

### Compressed Air Locomotive.

The *Street Railway Review* describes as follows a compressed air locomotive that is reported to have been successfully used for several months in the interior of the old Eagle Mines, near Pittsburg. This locomotive was built by H. K. Porter & Co., of Pittsburg.

Generally the construction is the same as a steam locomotive, with the omission of the boiler and water tank, these being replaced by two large cylindrical tanks holding the compressed air. These tanks are 36 inches in diameter and 16 feet long. The connection of the air reservoir with the cylinders is simple, and no difficulty is experienced from freezing either in summer or winter. The locomotive carries air at 500 to 600 pounds pressure, but ordinarily the pressure varies from 250 to 450 pounds.

In the mine where the locomotives run, the grades are varied. The largest up-grade is 1,200 feet at 1⅓ per cent, but varying to 5 per cent. Curves average 25 feet radius, but 17 feet are successfully rounded. An ordinary day's work of 20·5 miles, or thirty-one round trips, does not develop more than half the power of the motor. Over the longest entry up maximum short grades of 5 per cent from eight to eleven cars are hauled each trip, the weight of the car being 1,250 pounds and of the load 3,360.

The average charge of air doing this work was 334 pounds, running the pressure down 193 pounds and having 141 pounds pressure left at the end of each trip.

The air is compressed by a Norwalk compressor (made by the Norwalk Iron Works, of South Norwalk, Conn.), and situated for convenience 2,400 feet from the charging point of the engines. No loss of pressure is noticeable, although the air is conveyed through 3 inch pipes. The time for charging is one minute.

If charged to 500 pounds, the engine can make a distance of 1⅓ miles, doing heavy work, and it is practicable to make a running capacity of 4 miles with one charge. The compressed air locomotive is peculiarly fitted for this work, inasmuch as the narrow quarters, short curves, presence of fire damp, water seepage, and ventilation require a motor fulfilling most difficult conditions. The air locomotives are built in various sizes of cylinders, from 5 to 10 inches in diameter. The smaller sizes will run on 16 pound rail in 4 foot entries. The larger sizes require 20 to 30 pound rail and 4½ foot entries.

### Straw Bleaching.

Place the straw in tubs of whitewood, pour over it hot water, and allow it to stand for 24 hours. Pour off the water and run in a lye made from 1 pound potash in 3 quarts of water, and after standing a short time in this, place in a boiler and boil up for 9 hours, adding water from time to time to make up for that which is lost by evaporation. Wash well with water, give another boil in lye of half the strength of the last, and wash well. Then prepare a liquor of chloride of lime (bleaching powder) of 1 to 2 degrees Tw.; pour this over the straw, and allow it to stand for 24 to 36 hours, or until it is perfectly bleached. Rinse the straw well in several waters, and expose it to air until all traces of chlorine have disappeared. The straw is then ready for use.