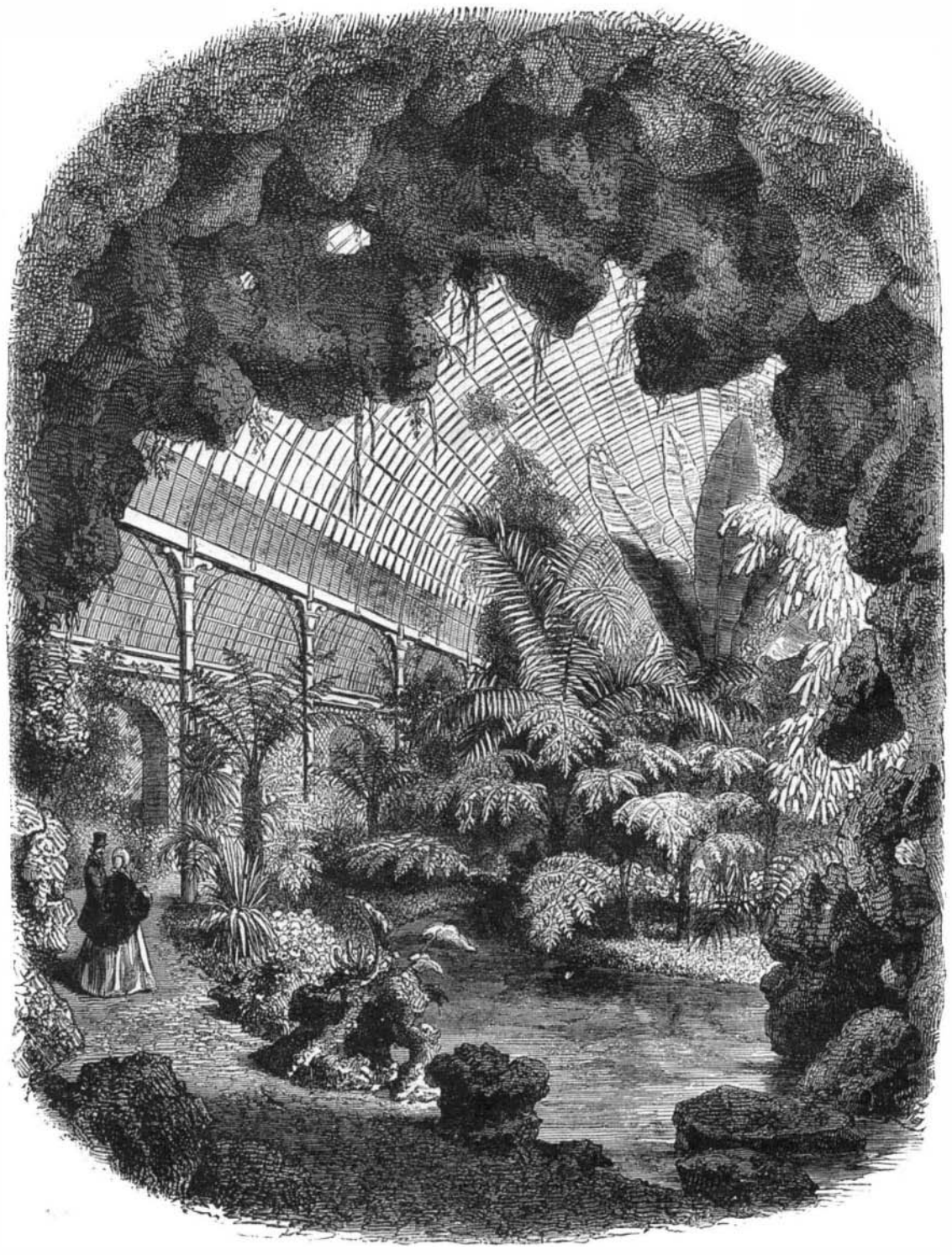
DESIGN FOR A CONSERVATORY.

We present herewith an engraving of a conservatory, called by its designer "a cool conservatory in the natural style." It is intended for the cultivation of such specimens (and they are very numerous and beautiful) as do not require stove heat to bring them to maturity, the protection by glass being generally sufficient. Very little artificial heat is enough to keep the temperature in winter at a minimum of three degrees above the freezing point, which is quite sufficient for the period of repose which is required for many of the plants from Australia, China, Japan, New Zealand, and mountainous tropical regions, etc. One can hardly believe what numbers of plants there are, often supposed to belong to tropical climates, with which a cool conservatory can be furnished. Numbers of our beautiful palms would yield to cool treatment; and hundreds of ferns require no better situation than the shelter of glass. The dracænas, agaves, acacias, dasylirions, ficus, aralias, banksias, tender conifers like the Norfolk Island pine, yuccas, grevilleas, rhopalas, and the cactuses, would certainly submit to the same treatment, without mentioning the smaller kinds, which only thrive under a low winter temperature.

The experience acquired of the natural style of arrangement in conservatories during fifteen years in Europe, says the *Garden*, enables us to recommend it with confidence.

More than thirty species of palm now flourish in cool houses. A great number grow in the cold regions of tropical mountains, such as the *ceroxylon andicola*, which is found at 10,000 feet and upwards. The *oreodoxa frigida*, and several kinds of *chamædorea*, rise up to the pine region; the *areca humilis* reaches to 8,000 feet in Java; the *chamærops martiana* to 7,800 feet in Nepaul; the *phœnix humilis* to 6,000 feet; without reckoning the *chamærops excelsa* of China, the *rhapis flabelliformis* of Japan, *corypha Australis*, etc. For a winter garden, palms ought to be kept in pots up to the period when their leaves divide and show their character, and their stems become at their base as thick as the arm. They must not be put in the ground before this, nor until they shall have been kept as much as possible in a warm greenhouse where the pots have been plunged in tan. They should be repotted twice a year, in spring and summer, when their growth is rapid, without cutting the roots, and in pots deep and narrow. A quiet and warm atmosphere, somewhat shady, but without stagnant moisture, is best suited to palms when young. Growing ferns have nothing to fear from the open air or the sun; it is only the stemless kinds which flourish in the shade and under other plants, their roots requiring nourishment. The *alsophila Australis* may be placed outside in the full sun without injury; if it be watered from time to time with liquid manure, it will acquire considerable dimensions in a short time, and be of unsurpassable beauty.



A COOL CONSERVATORY IN THE NATURAL STYLE.

A great number of the plants named will remain uninjured if protected from the frost; but it is better, as has been already said, to keep up the winter temperature a little over the freezing point; and even when the sun strikes upon the glass, raising the temperature, it will not be necessary to open the house at all during the winter. After February, however, when vegetation is getting active, it will be necessary to give air gradually, and to water in the evening. In March you must begin to shade with some light material up to the time that you can uncover the greater part of the conservatory, and at last place some of the plants in pots or boxes in the open air. As to the great palms and tree ferns, dracænas, aralias, etc., they will be better slightly shaded throughout the year, taking care to give plenty of air. Where it could be easily done, it would be desirable to remove the roof and allow the contents to be refreshed by the summer rains. Thus managed, with plenty of water and a proper amount of shade, it is very possible to develope splendid vegetation in such a structure.

DR MONCHAUX recommends the use of cold infusion of green coffee in the treatment of gout.

Arsenic in Hydrophobia.

In a late number of the *Correspondenz-Blatt*, Dr. Guisan gives a number of cases showing the value of arsenic as a prophylactic in hydrophobia, and even as a remedy also after the symptoms are marked. He relates that a rabid dog, between the 7th and 9th of June, bit thirteen persons in various towns of the canton of Freiburg. All were recommended to be treated with one twentieth of a grain of arsenic morning and evening, as a prophylactic measure. Eight submitted to this and none were affected. Four declined, or were not allowed to take, the arsenic. Of those four, two remained unaffected, and two died. One began the arsenic treatment, but speedily left it off; she was attacked, but at a much later period, and died. Dr. Guisan recommends not only the internal employment of the arsenic, but that the wound should be dressed with it.

Screw Propulsion.

The subject of ship propulsion, which some years ago was one of the most frequented fields for the inventor, has now, for a long time, been comparatively quiet. After almost every conceivable form and arrangement of paddle wheels, screw blades, and jet propellers had been proposed, and many of them tried practically, the screw has obtained the mastery, and we now scarcely ever hear of a paddle wheel steamer being built, while the jet propeller has failed even to obtain a footing except in a few experimental vessels for the Government or for pleasure boats. It is scarcely too much to say that, among those who labored to improve the screw propeller, no one is better known, or has been more successful, than Mr. Griffiths, whose system has been almost universally adopted in the Government service, and to a large extent in the mercantile navy.

When, therefore, we hear of Mr. Griffiths again coming before the public with a new mode of applying the screw propeller to drive ships, the recollection of his former successes awakens an interest which would not attach to the experiments of one less experienced in the particular subject he has undertaken to improve, when further improvement in it seems to have been almost given up as hopeless.

Some time ago Mr. Griffiths read a paper before the United Service Institution, in which he proposed to supersede the present system of employing a screw outside the ship at the stern by a pair of screws, one in the bow and the other in the stern, both working in tunnels. It had often been proposed to fit propellers of different forms in tunnels extending through the ship from the bow to the stern, but these had all been abandoned on account of the enormous loss of power, due to friction, which such a system must necessarily entail. Mr. Griffith's tunnels were not proposed to extend fore and aft; in fact they amounted to two short tunnels, one at each end of the vessel, the fore one, after leaving the propeller, sloping downwards, and coming out with an easy curve at the ship's bottom some distance abaft the bow, and the after tunnel opening from the bottom of the vessel an equal distance on the fore side of the stern, and sloping upwards towards the after propeller until it emerges towards the stern in a direct fore and aft line.

In this proposal, of course, the objection on the score of increased friction could not be maintained to the same extent as if the tunnels were of great length; but what little experience had been gained of tunnels was not much in their favor, and it was incumbent on Mr. Griffiths to show that with his new system a certain power would propel the vessel faster than the same power applied on the usual system, of a screw on the fore side of the rudder post, would propel her. To do this a number of experiments have been carried out with models on the canal at the northwest corner of the Horticultural Gardens, at South Kensington, and a close scrutiny and study of these experiments have convinced us that very remarkable results are likely to arise from the adoption of the system, and that while opening up some curious and difficult questions on the theory of resistances and propulsion, the subject is full of practical importance, as affording every encouragement that economical results will be obtained of a character sufficiently striking to command support in these days of high priced coal.

That there is a pressing need for improvement in our steam mercantile marine is apparent to all engaged in shipping, and is shown by the increased number of orders which are being received by builders for new sailing ships, compared with the orders for steamers. This apparent tendency to return to sailing ships, which characterizes the present time, is no doubt due to two causes, namely, the expense of working steamers, and the great losses which have occurred among them. Both of these objections are proposed to be removed, to some extent, by Mr. Griffiths' plan, which combines the most desirable feature of separate engines at the bow and stern, with, as it is contended, an equal speed and less expenditure of power. On this latter point we have witnessed a large number of experiments, the details of which we hope shortly to publish, and shall therefore content ourselves, on the present occasion, with giving a brief outline of their results. They were made with a couple of models, so arranged that they could be propelled in the ordinary way or on the tunnel system, and every care and attention was paid to insure the power applied being accurately recorded, as well as the number of revolutions of the screws.

Experiments were made with the whole power concentrated on one screw at the stern, and afterwards with the power divided, placing half in a tunnel in the bow, and the other at the stern; and the increased speed, with the new system, was very striking indeed, amounting to about 30 per cent in some of the runs; but this, doubtless, was assisted by other causes, to which we shall hereafter refer.

The most curious results of the trials appear when the model is tested with the engine at one end only at work, and compared with the result obtained with the screw working at both ends, and with the power doubled. It is well known that in ordinary vessels when the power is doubled, the speed is increased by one fourth; but in these experiments, trial after trial appear to show that when the power is doubled by adding a screw in the bow working in a tunnel, the speed is increased by one half.

We regret that space prevents us dealing, on the present occasion, more fully with these valuable and interesting experiments, to which, however, we shall return, and discuss fully the bearing they are likely to have on the steam shipping of the future.—*Engineering.*

OIL OF CLOVES is effectual in protecting animals against flies and mosquitoes.