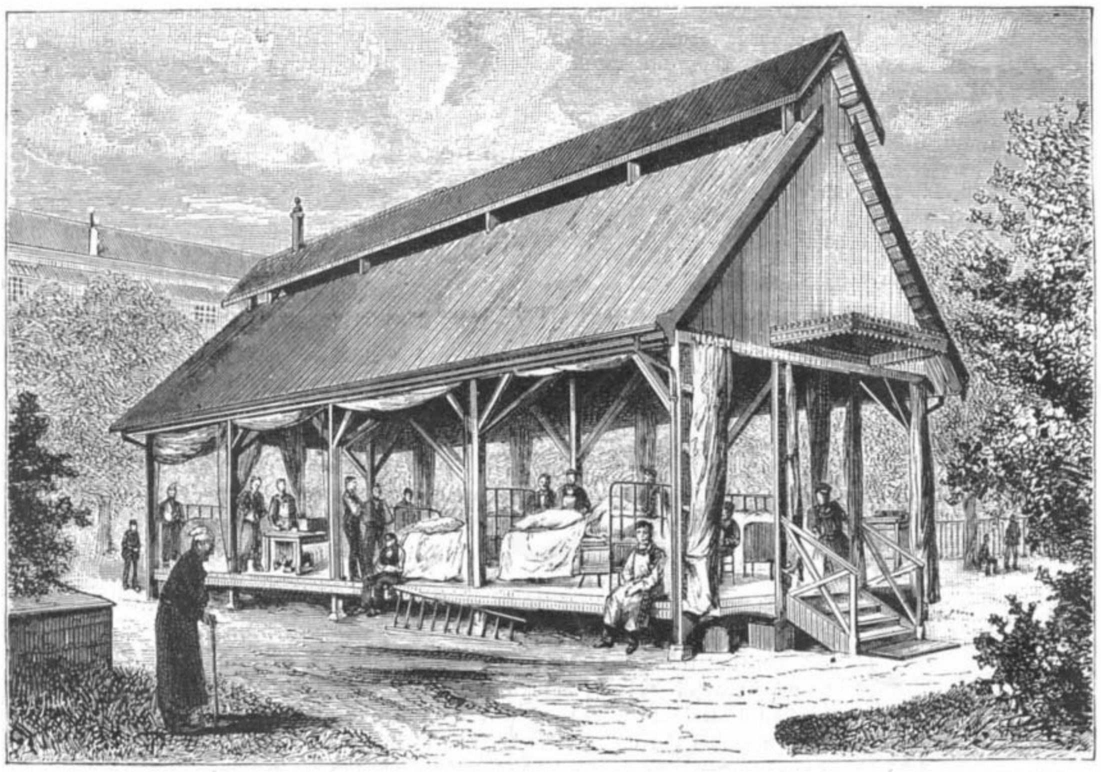
ISOLATING PAVILIONS FOR CONTAGIOUS DISEASES.

Physicians and hygienists have for a long time condemned that system of hospital buildings in which the patients, crowded in halls of a beautiful architectural aspect, find neither the necessary amount of air nor the isolation demanded by certain diseases. To cite the amount of expense occasioned by the construction of such edifices is enough to condemn a system that is repelled in the name of hygiene. Isolated pavilion hospitals are much the most healthful. During the war of the Rebellion the enormous number of wounded led to the improvising of barracks, which, as imperfect as they were, gave complete satisfaction to the heads of the hospital service. Experience, many a time repeated, has ended by triumphing over administrative routine, and, in many cities, a simpler and less expensive system is substituted for the edifices of old times. We may cite, as an example, the pavilions of Mr. Tollet constructed for the Bourges barracks, and, with a few modifications, made appropriate for the Bichat, Montpellier, and other hospitals. The hospital pavilion, or field hospital, shown in the accompanying cut, is situated in the gardens of the cantonal hospital of Geneva, and is designed to perform the role of an isolating ward for contagious diseases. It may likewise be appropriated to a service for the wounded, or, in a word, be adapted to all the needs of a hospital service. Among all the models of structures of this kind that have hitherto been devised, this is the simplest. It is built entirely of hard wood, simply varnished or coated with tar, and is 15 meters in length by 7 in breadth. To prevent dampness the floor is raised 70 centimeters above the ground. The roof, which has a steep pitch, is surmounted with a lantern to allow of the passage of air. The side walls are formed simply of thick curtains of sail duck. The structure contains eight beds. The arrangement, which is perfect for the summer season, appears to be less comfortable for that of winter, which is sometimes severe at Geneva. The walls then are lined with a double curtain, and the stoves that are installed in the interior suffice, it would seem, to keep up an equable temperature. When the infection of a ward necessitates its being evacuated, the patients are transferred to the pavilion, which offers the inestimable advantage of allowing them, during the extreme heat of summer, to be entirely in the open air. This is indeed an improved field hospital, of which the cost is not very high, and the erection of which may be effected very quickly.—*La Nature.*



ISOLATING PAVILION FOR CONTAGIOUS DISEASES

The Architecture of a Bone.

A lecture was lately delivered at the London Institution on "How a Bone is Built," by Mr. Donald McAlister, of St. John's College, Cambridge. The lecturer explained that he would treat the construction of a bone as a question of architecture or engineering rather than of anatomy. In looking at an ordinary marrow bone two points would strike one: In the first place, the shank or shaft of the bone was hollow, forming a somewhat thin walled tube; secondly, the end of the bone next the joint appeared on section to be not hollow, but filled with a spongy or "cancellous" meshwork of bony tissue. The tube form appeared not only in bones but in many other structures characterized by combined lightness and strength—such as the stalks of plants, reeds, bamboos, quills of feathers; and among human constructions in a vast variety of shapes, from tubular bridges to backbones of bicycles or tricycles. What was the common principle underlying all these manifold varieties? Why was it that, weight for weight, a hollow column was so much stronger than a solid one? The lecturer then showed that when an ordinary rectangular cross beam was slightly deflected by a load, the upper fibers were in a state of compression, while the under fibers were in a state of tension; whereas in the middle of the beam there was a neutral region neither compressed nor stretched. For load bearing purposes this region might be removed; the beam would thereby be made appreciably lighter but not appreciably weaker. The tube form of a bone was thus due to the fact that the material was concentrated at those parts which were most under strain and where it was most useful; it was removed from those parts where it added to the weight without adding to the strength. Tables were exhibited from which it appeared that bone in its physical properties resembled steel much more than such a material as cast iron. Bone, like steel, was almost as strong to resist tearing as to resist crushing. The spongy or cancellous ends of bone were next considered, and by photographs of actual specimens the lecturer showed that the apparently confused and irregular character of the tissue resolved itself on examination into a very beautiful and harmonious regularity. In the construction of such great structures as the Forth Bridge and the large cranes seen at the docks, engineers had found it useful to investigate the lines of the structure along which the pressure or the tension was at a maximum; these lines might be called stress lines *par excellence.* The material at disposal was most economically arranged when it was concentrated along these lines, leaving empty the mesh-like spaces corresponding to the neutral region of a cross beam. A skeleton or lattice framework might thus be built up, having all the strength of a solid structure of the same shape or loading, but with much less expenditure of substance. Such a structure would, moreover, be free from the danger of giving way by "shearing" or "faulting" in the geological sense. In other words, its parts would have no tendency to give way by sliding or slipping over each other; they could only be directly crushed or directly torn asunder. This was, therefore, an ideal mode of building such structures, and it was only because skilled workmanship was more expensive than material that engineers did not oftener put it into practice. In bone building, the lecturer said, there were no such obstacles in the way of perfect construction, and in such a part as the head of the thigh bone the principle was carried out in ideal perfection. The cancellous network in this bone was a material embodiment of the engineer's ideal lattice work of true stress lines, so much so that in the Zurich School of Engineering thin sections of the thigh bone were placed before the pupils as the best possible illustration of the true principle of construction. In conclusion, the lecturer remarked that when such instances of adaptation as appeared in the eye and hand, and perhaps he might now add the common marrow bone, were brought before us we were filled with wonder, and some saw in them evidences of what was called direct design. These evidences might nowadays be interpreted in perhaps a worthier and grander sense, but the wonder would remain for all who had eyes to see.

At any rate, apart from all theology, and taking only the strict architectural sense of the words, we must agree that a marrow bone was well and admirably designed.

John Henry Dallmeyer.

On the 30th of December, 1883, John Henry Dallmeyer, the gifted and noted English optician, whose name is familiar in every American photographic studio, passed away, at the age of 53. His name has been for a generation prominently before the world of astronomy, micrography, and photography. As a scientific optician he had no equal, and his works received acknowledgment and appreciation in various countries, especially in the United States, Austria, Germany, Russia, and France.

At home he was a Fellow of the Royal Astronomical Society; Russia constituted him a Chevalier, and France nominated him Officer of the Legion of Honor.

His marked ability in the construction of improved lenses for the camera made his name universally known among photographers. His demise will be generally regretted by the photographic fraternity, and those who are fortunate enough to possess his lenses will now doubly prize them.

We learn that his son, whom he has educated, will undertake to continue the business.

Waterproof Clothing.

Waterproof clothing which allows a free passage for respiration can be prepared by dipping in a solution of acetate of alumina. The latter is made by adding a solution of acetate of lead to a solution of alum, and decanting the mixture from the sulphate of lead which is precipitated. The articles are dipped into this liquid and allowed to dry without wringing them.—*Rundschau fur Pharm., etc.*

The Amber and Meerschaum Industry of Austria.

Within the last thirty years, says *Globus*, the amber and meerschaum industry of Austria has grown from a very small beginning to an independent and special branch, which is at present capable of producing excellent results, so that goods of great beauty and excellent quality are sold at relatively moderate prices.

The manufacture of articles from amber and meerschaum is chiefly concentrated at Vienna, although very respectable representatives of this branch can be pointed to in other large cities of that empire.

It is scarcely credible how wonderfully these two substances can be wrought, and what a variety of different articles can be made from them, simple or complex in form and all in excellent taste and elegantly made. It is only necessary to cast a glance into the show cases of the large Vienna amber and meerschaum firms in order to obtain an idea of the numerous elegant and artistic articles of magnificent workmanship that catch the eye of the passer-by and involuntarily invite to purchase.

First of all in elegance and variety is the immense collection of neat and elegant cigar holders, of the simplest as well as the most fantastic shapes. While in former years the magnificent meerschaum pipes ruled the day, at present, when cigars and cigarettes are used by nearly all civilized people, they are almost entirely superseded by cigar and cigarette holders. In addition to a variety of plainer ones we see such figures as angels, Venuses, veiled Venuses, sleeping Cupids, Indians with amber lances, jockeys with their horses, etc., also heads of women, of zouaves, and of Bedouins, and are astonished at the thousands of methods of combining these two substances, amber and meerschaum, and no less at the artistic design and execution of the articles. Equally varied is the collection of meerschaum pipes, that must enchant every passionate smoker. We see there the Dublin pipe of amber and meerschaum, the Albert, the Rigolbouche, the Irish, and the Belgian pipes, also the curved London and French pipes, and the Suez Canal pipes mounted in silver, meerschaum hand pipes with eggs, serpents, fruit, etc, all neatly and tastefully cut in meerschaum. Then there are the celebrated Turkish pipes, both flat and pointed, and a legion of pipes ornamented with character heads and other carvings. Then the never failing artistic objects with which large pipes are ornamented, carved in larger dimensions. Cigar holders ornamented with initials, monograms, or whole names sell well.

We must also state that, like meerschaum, amber is used alone, or both together are used for smokers' articles.

For many years past a new mass called artificial meerschaum has been made from the chips and turnings of genuine meerschaum, and at present it is largely employed. Besides this, different kinds of artificial amber are produced and used to imitate these various articles.

Amber is distinguished by its remarkably fine color, and like meerschaum it is turned on the lathe, filed, cut, and sawed, and from this expensive material magnificent ornaments are made, such as necklaces, earrings, pins, brooches, and bracelets; also smokers' articles, especially mouth pieces and cigar holders, also coral, cups, saucers, wreaths, etc.

Austria imports both of these valuable raw materials—amber and meerschaum—in very large quantities, the former mostly from Danzig, the latter chiefly from Brussa in Asia Minor. The quantity of raw material imported, as well as of finished goods exported, is simply enormous.—*Deutsche Industrie Zeitung.*

The Phylloxera in Sandy Soil.

The London *Times*, in a recent issue, contains a dispatch which gives the condition of the French grape crop as follows:

"Only twelve of the southern departments seem satisfied with their vintage. The yield in general is expected to be even below the average of late years. Burgundy and Champagne report a yield extremely deficient both in quantity and quality, while Macon counts upon a better crop than had been predicted, though of somewhat poor quality. In Charente the quality is also poor."

The same dispatch, in summing up the observations of Lalande, Mayor of Bordeaux, on the conditions of the vines in the phylloxera-infested sections of the country, gives a most favorable account of the use of American stocks, and shows that even the French vines at Aigues-Mortes are flourishing in the sandy soils, thus emphasizing the fact of the impotence of the phylloxera in such sandy soils.