

MEDIAEVAL IRONWORK.

The accompanying engraving shows a beautiful specimen of the renowned wrought ironwork of the middle ages. It is a lattice or grille for a window, and is a graceful and elaborate piece of work, wrought out entirely with the hand hammer. It is of German workmanship, and is to be seen at Botzen, a city of the Tyrol, one of those ancient cities to whose workmen we moderns are indebted for countless examples of what skill and taste can do in making our homes, churches, and streets beautiful, and the influence of whose works is now to be found in all parts of the earth.

Improved Hospital Construction.

We are indebted to Mr. John R. Niernsee, a well known architect of Baltimore, Md., for copies of sketches of various descriptions of wards suggested by him for the John Hopkins Hospital, in the above named city; also for a copy of his own review of the various complete plans submitted for the construction of that institution. In the sketches, the adjuncts of the wards are isolated from the latter by placing a connecting closed corridor between them in the basement only. The isolating vestibule connecting the buildings on the main floor has ventilation of its own, thus preventing any contaminating intermixture of air currents. By this system the architect proposes to obtain virtually all the advantages of the detached pavilion system of the lately completed great hospital in the city of Berlin, Prussia. The drawings exhibit five differently shaped common wards, with diverse arrangements of their adjuncts or service buildings, but all based on the principle of effectual isolation of the common ward.

The New Thames Tunnel.

The new subway between North and South Woolwich, which was lately commenced in London, is estimated to cost \$375,000, and will consist of an iron tube in segments 9 feet high, with a breadth sufficient for four adults to walk abreast. It will be lined with white glazed pan-tiles and be lighted with gas, and will possess an efficient system of ventilation. The entrance at the south side of the Thames will adjoin the North Woolwich station of the Great Eastern Railway, and on the north side will adjoin the Woolwich pier. The charge to casual passengers will be two cents each way, but to workmen going to and fro books of tickets will be issued at a considerably reduced rate. The new tunnel is being constructed chiefly for the accommodation of the workmen engaged at the St. Katherine's Dock Extension Works, where 3,000 men will be employed for three or four years to come, the Beckton Gas Works, where 2,000 stokers are at work, Henley's telegraph works, Silver's india rubber works, Foster's wine stores, etc., numbering altogether some 8,000 men, who at present have little or no house or food accommodation within easy access of their work, North Woolwich being a dismal swamp unsuited for residential purposes. The new docks, which will materially increase the dock accommodation of the Port of London, will reclaim twenty acres of marsh land, and convert North Woolwich into a comparatively healthy island.

Liquid for High Temperatures.

It is often necessary to surround the pipes of heating or evaporation apparatus, and hot air apparatus, ovens, stoves, etc., with a boiling liquid at a temperature above 212° Fah.; it is also necessary to make use of water baths producing high temperatures. The liquid employed for this purpose is simply water in which sea salt has been dissolved. Oil baths, etc., are also used. Messrs. Grimm and Corvin propose, instead of these various agents, to make a solution of chloride of lime in glycerin, a solution which does not boil below 572 or 626° Fah., and has the further advantages of never attacking metals nor congealing.

Manufacture of Clouds.

The stage of Wagner's theater, at Bayreuth, required 3,247 gas jets. The rising mists and gathering clouds needed for scenic effects were produced by two large engines placed at a short distance from the theater, whose steam was carried by pipes to reservoir, from which it could be distributed by a network of tubes over the whole stage. In the corner towers of the theater are two cisterns, each holding about 1,200 gallons, from which water can be obtained at a very high pressure in case of need. The gas and water works of the theater have cost \$30,000.

Ozone an Active Poison.

The eminent French chemist P. Thénard writes as follows in regard to the effect of ozone, or active oxygen, on the animal system. "I believe," says he, "that it is high time that the attention of the public, and even of the learned, was directed to the widely spread errors in regard to the action of ozone on the system. Far from being a remedy, it is rather one of the most energetic poisons that has been prepared in our laboratories, and the serious accidents which have occurred in my own leave no doubt of it. I will not enlarge on its physiological action, since A. Thénard will soon publish an article on that subject; but will only give prominence to the fact that, under the influence of ozone, even when greatly diluted, the blood corpuscles rapidly contract

and change their form, the pulse become slower, so much so that a guinea pig with a normal pulse of 148, after being kept 15 minutes in a weak ozone atmosphere, had the pulse reduced to one thirtieth. At the present time, when an accurate method of measuring temperature is of great assistance in medicine, ozone may possibly prove a means of preventing too great a rise of temperature; but inconsiderately to disseminate ozone in inhabited places, in the delusive



A MEDIAEVAL WINDOW GRILLE.

hope destroying a miasma, would be very dangerous. If our strongest poisons furnish in certain cases our best remedies, we must first learn how to use them, so as not to make a mistake in the time of giving or in the dose. Then, is it certain that ozone does exist in the atmosphere? Its presence there is proven by means of colored paper, the color of which changes more less in contact with the air. But who knows that there is not some other substance present in atmospheric air, which can modify this paper in the same manner as ozone? Wittmann passed a stream of air through the flame of a glassblower's lamp, and obtained a kind of air which acted upon the so-called ozonometric paper (starch and iodide of potassium) just as ozone does; but while this air disinfected badly smelling water without making it acid, ozone does not disinfect and does make it acid. Moreover, it is well known that ozone cannot exist at a temperature of 392° Fah. (200° C.), while this modified air of Wittmann's was exposed to a temperature at which glass softens."

It will be seen that there is still much to be desired in the discussion of this question, although it would be considered over-hasty to deny the possible presence of ozone in the air, or to assert that it is never used with profit in medicine.

AN ORNITHOLOGICAL ORNAMENT.

There is one distinction which the student of the superb



exhibits of China and Japan, at the Centennial Exposition, finds himself called upon to make on comparing the respective displays. And that is that: while the Japanese impress

us by their remarkable progress, by the wonderful celerity with which they are adapting themselves to Western ideas, habits, and customs, and with the admirable neatness and artistic beauty of their handiwork: still one may look in vain for the evidences of that tireless patience which, reinforced by skill transmitted from father to son for ages, results in the production of the marvelous work in ivory, in wood, and in porcelain, which abounds in the Chinese department. The Japanese bronzes exhibit the perfection of delicate labor; the Chinese carved wood ornaments show the same characteristic, but in addition indicate labor carried on over very long periods of time. The essential feature of every thing Japanese is ingenuity and skill; of every thing Chinese, patience; and nowhere throughout the Chinese exhibit is this last characteristic more prominently displayed than in the case of ivory goods in which the curious ornament represented in the annexed engraving is found.

In this case are the famous Chinese balls—hollow sphere after sphere being carved one within the other out of a solid lump of ivory, and yet each sphere is exquisitely carved and ornamented. Here also are superb sets of ivory chessmen, valued at over four hundred dollars per set; models of Chinese junks with every portion a marvel of delicate filagree work; fans reminding one of petrified lace and grotesque statuettes in ivory, in forms such as only originate in the Celestial mind. The ornament we illustrate is a large bird's head, the bill being made out of ivory, richly carved in groups of men, houses, and trees on its upper side. At this point also the bill is stained or rather clouded a deep red. The head proper is covered with feathers attached in some incomprehensible way, but so naturally that one would suppose, did so gorgeous a bird—not to mention a creature with an ivory beak—ever exist, that they grew there. The feathers above are of a deep peacock green; as the eye is approached, an exquisite shade of light blue is contrasted with a golden yellow, and a few light crimson feathers stand prominently forth from those of softer hue. Beneath the bill the feathers are of a rich brown flecked with black. The combination is one of surpassing beauty. The head rests on a base of ebony carved in intricate designs, and this in turn on an ornamental pedestal.

Flax Manufacture in America.

The commencement of a new manufacturing industry in this country is exemplified in the successful establishment of a small linen factory at Manchester, N. H. Some enterprising parties secured some land, sowed it to flax, gathered the crop, and prepared it for spinning, hired a Scotch flax finisher, procured spinning machinery and one loom, and worked up the flax carefully and slowly, until by easy steps the business was thoroughly understood and mastered. The amount of money risked was small, and in case of failure the loss would have been trifling. But it is precisely such ventures as this, and so conducted, that succeed, and this experiment has become a success. A linen manufactory is about to be put into operation with a certainty of its being practicable and profitable. It was in this way that the cotton manufacture began in the Southern States, where it is now a grand success. Woolen manufacture began similarly in the West, where it is now firmly established, and we are well convinced that it needs only to be begun in this careful manner for flax manufacture to become also an established business in the West.—*Bulletin of the American Iron and Steel Industry.*

Jacquard, the Inventor of the Figure Loom.

The Italian proverb, *chi dura, vinc*, is so true that the world has often had to lament the interruption of useful labors by the too early death of those who have begun them; the projector fails, and his half-executed projects fall back into formlessness. Jacquard, tried by fortune with a severity exceptional in the history of inventors, did at least last long enough to perfect his invention and know its success. The story of his life and an historical account of his world-famous loom are contained in a handsome quarto from the pen of Dr. Kohl, lately published.

Born at Lyons in 1752, the son of a journeyman silk weaver, young Jacquard grew up without more formal education than the reading he snatched as an apprentice in a bookbinder's shop. His energetic spirit was but disciplined by his difficulties; yet to have been able to have a share in advantages, now at hand's reach of every mechanic, would have been of priceless benefit to him, and, probably enough, of advantage to ourselves, the heirs of his successes. His mother died while he was yet young; when he was twenty his father died, bequeathing him a little house and a hand loom. Jacquard quitted his bookbinding for the loom, seeing the time come to carry out his improvements in it, which he had long been revolving. He married a woman who endured many years of privation with him: their first born was not many months old before poverty came upon him; he sold his little patrimony; and destitute, with wife and child, faced about to fortune, fighting necessity with a quick brain. Inventing, contriving, improving, he fought his way on till the thirty-seventh year of his age, when the revolution broke out.

He now became a soldier in the non-figurative sense of