

specimens raised from 3,000 to 4,000 feet deep, the eye-stalks have lost their special character, terminating in a strong point, serving evidently another purpose in place of an eye.

We have noticed a somewhat similar peculiarity in some bugs and spiders of the Mammoth Cave, in proportion as they are found nearer to the entrance or in the recesses of galleries many miles in length or depth.

These are very striking illustrations, proving the gradual modification of an important organ—the eye, and that it depends on the gradual diminution and final disappearance of light.

New Publications.

Manual for Railroad Engineers and Engineering Students. By George L. Vose, Professor of Civil Engineering in Bowdoin College. Boston: Lee & Shepard.

This is an excellent and most complete work of 570 pages, illustrated with 165 wood-cuts, and 31 large plates. It contains all the rules and tables needed for the location, construction, and equipment of railroads as built in the United States, and offers to railroad engineers information upon the various matters relating to this subject, giving reliable numerical results required in every-day work. At the same time the work is a most excellent text-book for engineering students, and a peculiarity which will undoubtedly be appreciated by the majority of those who will use this book is, that as little mathematics have been introduced as possible, and scientific discussions avoided, the book being thoroughly practical, and written in so clear and comprehensive a style as not to be above the ordinary intelligence of road-masters. A large portion is devoted to such technical details upon which the success of railroad engineering depends. The book commences with an introduction containing a short account of the progress of the railway system, their cost, usefulness, and results; the character of the roads, their safety, the different gauges, etc. The practical instruction is divided into twenty chapters: 1. Reconnaissance of the localities, with barometric levelling. 2. Survey, with the running of the preliminary line and establishment of grades. 3. Location, with all the details of curves and grades, illustrated by practical examples of the most important engineering facts of railroad construction. 4. Laying out work, locations, slopes, culverts, tunnels, and bridges. 5. Earthworks. 6. Tunnelling and rock excavating. 7. Strength of timber, iron, and steel. 8. Strength of material, with practical rules. 9. Connecting parts of bridges. 10. Strains of girders. 11 and 12. Practical bridge-building. 13. Draw-bridges, tressel-work, etc. 14. Foundations. 15. Masonry. 16. Superstructures. 17. Locomotives. 18. Rolling stock. 19. Railroad stations and shops. 20. Railway management. Finally the book closes with a most elaborate appendix of necessary general information, occupying some 100 closely printed pages. As a whole, the book can not be too highly recommended, as it fills an existing vacuum and supplies exactly what was needed.

Improvement in Steam-Engines. By John Houpt, of Pennsylvania. Philadelphia: J. B. Lippincott & Co.

This is a useful book of 78 pages and some 30 lithographed illustrations of successive inventions made by Mr. Houpt, principally tending to improve the condensing apparatus for marine steamers, whereby a powerful refrigerator or surface cooler is employed to use cold salt water in order to cool down the fresh water coming from the hot wells, to be used over again and again as cold condensing water in the jet condenser, thus avoiding, in marine steamers, the use of any salt water in the jet condenser or boiler. Mr. Houpt proposes for large steamers, when there is room for it, to divide the exhaust steam and condense a large portion of it in various different apartments, or partially self-clearing surface condensing cases, thereby drawing off the main portion of the exhaust steam directly from the steam-cylinder into the self-clearing surface condensers, thus relieving the jet condenser from a large portion of its work in the condensation of the exhaust steam. The construction and operation of a self-clearing jet condenser for land and fresh-water engines, and various other improvements in the steam-engine, also form a part of this book, of great interest to all concerned in the progress of this business.

The Nitro-Glycerin as Applied in the Hoosic Tunnel. By G. M. Mowbray, Operative Chemist. New York: D. Van Nostrand. North Adams, Mass.: J. T. Robinson & Son.

This work is the third edition of one which we have noticed before in our paper; but it is not a third edition that we so often find nowadays, a reprint from the same stereotyped plates, but it has been re-written by the author. It contains besides information similar to that found on page 231 of our Vol. IV., an account of its application in the Hoosic tunnel, also to sub-marine blasting, torpedoes, quarrying, etc. It gives the result of six years' practice and observation during the manufacture of upwards of 500,000 pounds of nitro-glycerin. It also gives information on mica blasting-powder, dynamites, with accounts of various systems of blasting by electricity, priming compounds, exploders, electrical machines, etc. The work contains thirteen illustrations, tables and appendix, is a very fine specimen of typography, and a credit to the publishers.

The Mother's Hygienic Hand-Book. By R. T. Trall, M.D. New York: S. R. Wells.

This publication tends to the normal development and training of women and children, and the treatment of their diseases with hygienic agents. The experience and ability of the author enables him to give that practical advice which mothers need all through their lives. The book covers the whole ground, and if it be carefully read, will go far toward giving us an "enlightened motherhood." It should be read by every wife, and every woman who contemplates marriage. Mothers may place it in the hands of their daughters with words of commendation, and feel assured that they will be the better prepared for the responsibilities and duties of married life and motherhood. It is a fact that, other things being equal, the diseases of women and their infants are in direct ratio to the unhygienic habits of the mothers; and this being the case, how important it is that the knowledge contained in this book should be widespread.

Erratum.

In the admirable cottage design of our October number, by some oversight the dimensions of the several rooms were not given. The universal favor with which it is meeting, impels us to render every facility to those examining it, by herewith enumerating the several rooms, with their dimensions. They are as follows: parlor, 14x17 feet; dining-room, 14x16 feet; kitchen, 13x17 feet, embracing the recess between the two closets; front hall, 10 feet wide; rear porch, 6 feet wide; chamber over parlor, 14x13½ feet; chamber over kitchen, 10½x14 feet; chamber over hall, 10x10½ feet; chamber over dining-room, 10½x14 feet; bath-room, 6x7 feet.

Miscellaneous and Advertising.

The wood-working machinery of Messrs. Goodell, Braun & Waters, of 1507 Pennsylvania Avenue, Philadelphia, includes every variety of endless-bed single surfacing machines, endless-bed planers and matchers, endless-bed double surfacing machines, and small surfacing machines. These machines are made in a superior style, and the satisfaction they are giving is a sufficient guarantee of their worth.

The band-saw of Messrs. E. & F. Gleason, of 27 Haydock street, Philadelphia, has received some severe tests, yet it has always stood them well, and the beauty with which it executes work is a marvel.

The pony planers of Messrs. Frank & Co., of Buffalo, N. Y., are always reliable. They are simple and durable, and do their work to perfection. This firm deals also in all kinds of other wood-working machinery.

Persons fitting up the heating arrangements of their houses, stores, and offices for the winter, should examine the radiator of Mr. A. Carr, of 43 Cortlandt street, New York. Many private and public buildings have been fitted with them, and in every case they have given the utmost satisfaction.

The vast number of our manufacturers and others who have used the Sturtevant blower of Mr. B. F. Sturtevant, of 82 Sudbury street, Boston, speak of it in the highest terms, and the immense sale this blower has met with is not to be wondered at when its great value is considered.

The eminent firm of Messrs. Clark Reeves & Co., of Philadelphia, are busily engaged the year round in erecting bridges of all descriptions in every part of the United States and South America. Their vast experience and wide reputation enable them to compete successfully with rival concerns.

Messrs. E. P. Allis & Co., of Milwaukee, Wis., turn out some of the finest machines manufactured, and for almost every conceivable purpose. Among these is their independent exhaust variable cut-off engine, which is one of the most reliable and economical engines made, consuming but little fuel and working in the most perfect manner.

"Week's Doings in Wall Street" explains stock operations on small capital, without risk. Copy sent free. Tumbridge & Co., No. 2 Wall street, New York.

The New Capitol at Hartford, Conn.

WE here present to our readers an engraving representing the new Connecticut state house, for which we are indebted to Messrs. Case, Lockwood & Co., printers at Hartford. It is seen that the style of architecture is that which prevailed in the middle ages—the secular Gothic, and is now being revived for public and private edifices, not only in this country, but in all the countries of Europe. The dome which is the commanding feature of the building, is not altogether in this style, but in that of a later date, and was not included in the original plan, according to which the building was to be surmounted by a rectangular tower, being more in keeping with the rest. Notwithstanding this we approve of the change, as it gives a more commanding character to the whole building; we only hope that the cylindrical portion under the dome proper will be made some 20 or 30 feet less in height than here represented, as at present it is too high in proportion to the main building, except in case this latter is to be raised by the addition of another story, as was done with the New York Post-Office, now nearly completed. Such an addition of some 20 feet in height to the main building would wonderfully increase the appearance, as now there is too much of the roof, gables, dormer windows, turrets, and dome above the cornice in proportion to the height of the main front wall, which is only 70 feet, while the height of the tower, from top of roof to spring of dome, is 75 feet. The dome itself is 32 feet high, the lantern above 55 feet, which, added to 18 feet for roof, gives height above front wall 180 feet. The length of the building is 300, and the width 200 feet, while the dome is 53 feet in diameter at the base, and richly adorned with arcades, columns, galleries, etc., and will be built of white marble, of which the greater part of the building is to be constructed, while gray and red granite will be used for columns. The dome is twelve sided, having at each terminal a figure carrying the arms of one of the original thirteen States, while the figure for Connecticut surmounts the cupola and holds the original charter of the State. The representatives' hall, which is the central building of the south front, is lighted on three sides, and is supported on an arcade of polished granite columns with carved granite caps. The tympani of the arches are to be filled with sculpture illustrative of the history of Connecticut. There will also be subjects to show the founding of the colonies, and their struggles and success in achieving their independence. The extreme height of the building, including the dome, is 250 feet.

At first the legislature appropriated half a million of dollars for the building, provided the city of Hartford would give an equal sum and furnish the site. Hartford accepted the proposition. A commission of able and respected citizens was appointed to construct the building. Feeling that they were restricted to a million of dollars, the commissioners contracted for a building, on Mr. Upjohn's plan, for \$875,000, reserving the sum of \$125,000 for architects' fees, superintendence, and contingencies. But this money was quite inadequate in the construction of such a building as the State really wanted. The investigation of a capable committee, during the last session, and the debates in the general Assembly, showed that the representatives of the people desired certain changes, and reference was pointedly made to the tower, 20 feet in diameter, in the original plans; to the height of the representatives' hall and the senate chamber; to the absence of ornamentation essential to the dignity and character of the building; to internal finish, in a number of respects; to the want of light in the legislative halls; to the construction of the eastern and southern entrances; and the absence of any entrance or outlet at the west end. The building was not to be fire-proof. And finally, the marble covering all sides was to be rock-faced, that is, rough and uneven. These objections, so urgently pressed in the legislature, are met in the improved plan.

A section, 40 by 80 feet, is to be built at the center of the building, on the south side, for the representa-

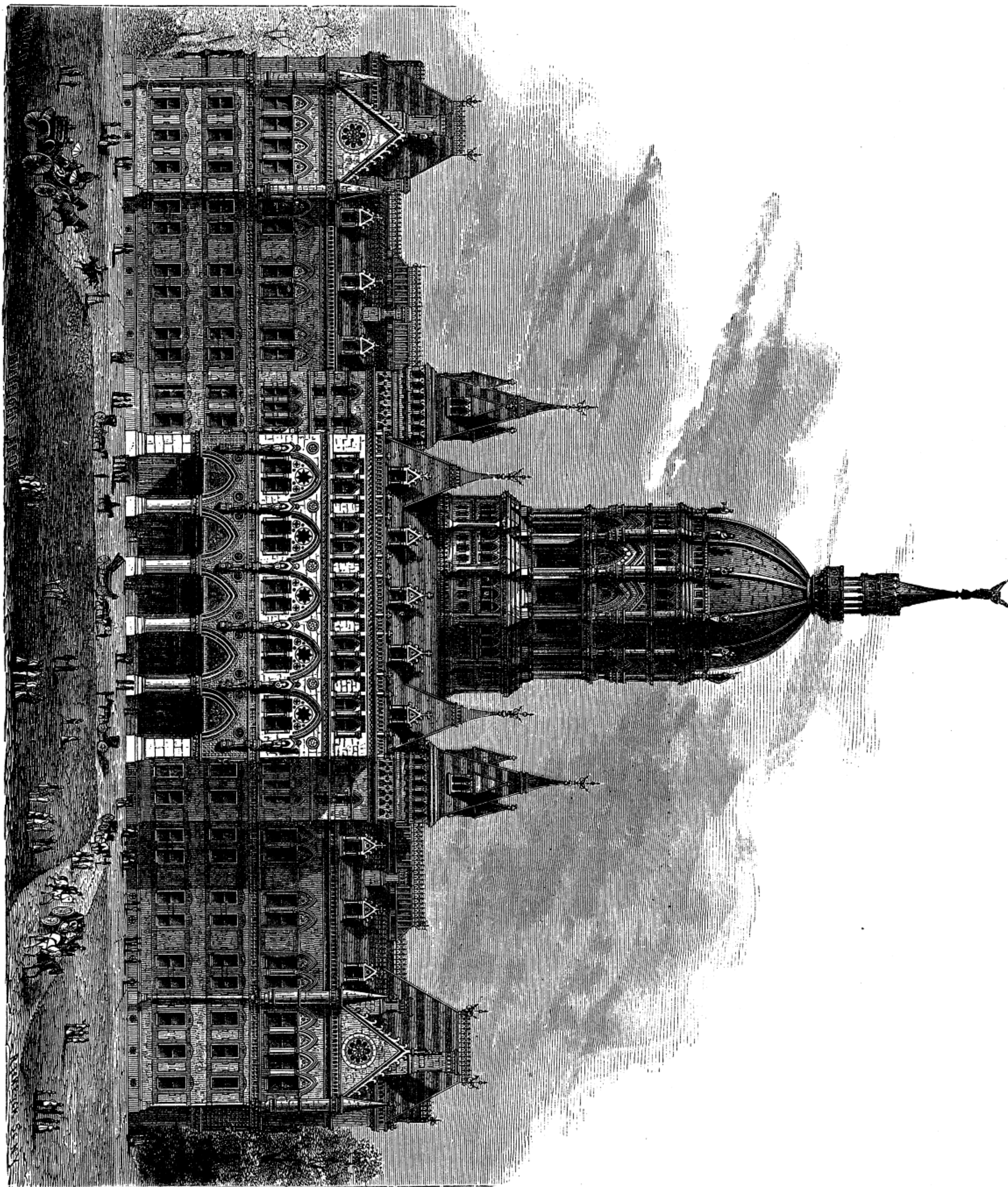
tives' hall. In the first plan this hall was to be inside the main building, facing to the north. The new plan gives it an abundance of light, and furnishes a pleasant and beautiful hall. The Senate chamber will front on the east, on the same floor. The marble is to be fine pointed instead of "rock-faced," as ordered in the original contract. The eastern and southern entrances will

templated. It was to cost \$1,000,000, but when it was concluded to have it thoroughly fire-proof, the Legislature appropriated \$500,000 additional. In the offices of the Treasurer and School Fund Commissioner a burglar-proof vault is to be built. The foundations of the building have been greatly strengthened.

All the modern conveniences of water, gas, closets,

per, 32 feet; height of lanthorn above dome, 55 feet; north and south hall, 80 x 200 feet; east and west hall, 40 x 300 feet; representatives' hall, 85 x 66 feet, twice the size of the present one, and will have galleries on three sides; senate chamber, 50 x 40 feet, and will also have galleries on three sides; Supreme Court room, 40 x 30 feet; state library, 60 x 40 feet.

The New Capitol for the State of Connecticut, now in Course of Erection at Hartford.



correspond with the northern, while a handsome entrance is also provided on the west end, giving complete circulation through the great hallway of 40 feet in width and 300 feet in length.

The entire building will be fire-proof; iron beams and joist to rest upon brick arches, and iron rafters take the place of the pine timber which was at first con-

templated. There are to be many comforts and conveniences to which the old State Houses were entire strangers. The size of the building is as follows: length, 100 feet; greatest width, 200 feet; height, total, 250 feet; height to cornice, 70 feet; height from cornice to top of roof, 18 feet; height of tower from roof to spring of the dome, 75 feet; height of dome pro-

The location of the building, situated as it is in the City Park of Hartford, on an elevation giving it a commanding position, is for beauty perhaps unrivalled by the site of any public building in any city in the Union. It will be a credit not only to the city and state, but to the whole country, and especially to its able architect, Mr. R. M. Upjohn, of this city.