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SUMMARY:—

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THE New York Times has a candidate for the office of Supervising Architect of the Treasury Department, in the person of Mr. D. H. Burnham, who, as it hopes, might make the great sacrifice of income which would be necessary, for the sake of the services that he could render to art in that capacity. It is in the highest degree improbable that Mr. Burnham would abandon a position at, or near, the very head of the profession in this country, with an income which is said to be nearly a hundred thousand dollars a year, to become a mere routine official, whom a political exigency, or the caprice of a superior, might at any moment send back to private life. However great may be the mutual esteem between the Supervising Architect and the rest of the profession, and, with some incumbents of the office, this reciprocal regard has been most honorable to both parties—the official architect of the Treasury, being an official, must give up the initiative, the exercise of his own imagination, and control of his design, which alone entitle a man to a place among artists; and we are sure that Mr. Burnham would never surrender these. Nor can we see how art would be much the gainer if he should do so. Undoubtedly, it would be a fine thing for the pocket of the public if it could hire an architect so brilliant and accomplished for a salary about half as large as that which he pays his own principal clerks; but the public idea of what the services of architects are worth differs already quite widely enough from that entertained by the profession, without being confirmed by the spectacle of one of the most conspicuous modern masters of the greatest of the arts bustling about the Government plan-factory, at the behest of Senators and Representatives, for a salary probably inferior to that of the White House cook.

MR. JOHN ORD, who succeeded the late Mr. McArthur as architect of the Philadelphia Public Building, has had an unfortunate misunderstanding with the Public Building Commission, which has not only a certain interest for his friends in the profession, but seems to convey a lesson to other architects who may be employed on public work. So far as we can gather from the Philadelphia papers, the history of the case appears to be that the Public Building Commission, in making out their usual estimate of the amount of the appropriation required for the building for the next year, inserted an item for the salary of the architect, fixing

it at \$4,000 instead of the \$7,500 which had been previously paid him, and omitting the usual provision for an assistant for him, and a clerk for the President. Before this was acted upon, or, possibly, before it was presented to the City Council, one of the members of the Finance Committee of the Council went to Mr. Ord in a great hurry, and said that the Finance Committee was about to meet, or had already met, and wanted a statement of what money would be required for the City Building. Whether Mr. Ord knew that any estimate had been prepared by the Commission is doubtful, and, to the request of the Finance Committee he replied, very properly, that it was out of his province to make such estimates, and that the Commissioners alone were authorized to do so. None of the Commissioners, however, were within reach, and Mr. Ord finally made, under protest, a very hurried estimate, including, as had been usual in previous estimates, his own salary at \$7,500, with \$1,500 for a draughtsman and \$1,200 for the clerk to the President of the Commission. No objection was made by any one to the estimate for some time, but two or three weeks afterward, one of the Commissioners, with another city official, came into the office of the Commission, saying that the whole appropriation was in danger, because of these items, and that they must be changed. The indications appear to be that, in the meantime, the Commission's estimate had reached the Finance Committee, and that the discrepancy between it and Mr. Ord's estimate had attracted unfavorable notice. However that may be, the matter was referred to the Secretary of the Commission, who revised the draft, reducing the architect's salary to \$4,000, and omitting the items for the draughtsman and clerk. On its way back to the Council, however, it seems to have undergone another transformation, the items for draughtsman and clerk having been restored, but that for architect's salary left unchanged; and in this form it was accepted by the Council, and the order making the appropriation passed in accordance with it.

THE next person to concern himself with the matter was the Controller, who, on comparing the appropriation with the original estimate of the Commission, found a discrepancy, in the items for draughtsman and clerk, and sent to the Commission for an explanation. The Commission appear to have learned then, for the first time, that Mr. Ord had made an estimate, including these items, as well as a larger salary for himself than the one they had fixed; and those who know the strictness with which public officers are held to their financial proceedings, and the jealousy with which they regard any attempt to infringe their prerogative, can imagine their wrath at what they presumed to be Mr. Ord's unwarranted tampering with their estimate. As the architect of the building is elected from year to year, and Mr. Ord's last term had already expired, there was no need of dismissing him, but the Commission, as a mark of its displeasure, immediately elected, in his place, Mr. John T. Windrim, the son of the Commissioner of Public Works. Even this was not the end of the matter, for Mr. Windrim promptly declined the appointment, and the place was finally accepted by Mr. W. B. Powel.

MR. R. M. HUNT has received the distinguished honor of promotion from the rank of Corresponding Member of the Institute of France to that of Associate. Very few foreign architects, and still fewer Americans, ever reach this distinction, the highest that France can offer as a reward for artistic work. The whole profession in this country will rejoice in Mr. Hunt's honors.

THE artistic passion for the nude which possesses Mr. Kenyon Cox and Mr. St. Gaudens seems to have brought more trouble upon the latter. Hardly had the newspaper controversy over the Columbian medal subsided when one of the Boston daily papers discovered that two persons shockingly in need of apparel were represented in the sculpture which adorns the front of the new Public Library. It is needless to say that it made its discovery known to everybody who was willing to give one cent for the privilege of reading about it, and the other papers lost no time in affording opportunities for persons, with two cents to spare, to study

the matter under aspects varying according to circumstances. As might have been expected, the papers with an artistic or literary reputation to support took the ground that the naked figures over the Library door were quite proper, and that those who objected to them only did so because of their own evil thoughts; while the representatives of the everyday people maintained that the figures were, in such a situation, offensive and improper. The City Council, after viewing the premises, took the latter view, and voted unanimously to have the sculpture changed; but, as the sole control of the building is, for the present, in the hands of the Trustees, it is not very evident how the Council can carry its ideas of propriety into execution. Meanwhile, we are ourselves inclined to side with the City Council. It may be, as the champions of art say, that the objection which other people feel to Mr. St. Gaudens's figures proceeds from evil thoughts, from which they are themselves free; but it certainly does not follow, because a large portion of mankind is liable to have evil thoughts suggested by such objects, that it is desirable to place them in public places. Apart from the matter of evil thoughts, however, we doubt very much, and have doubted for some time whether the nude figures do not detract from the beauty of the Library front. Whatever may be said of the beauty of the unclothed human form, there is no question that its dignity, as well as its appropriateness as an architectural decoration, is enhanced by drapery. Michael Angelo once painted a picture, in which, to display his knowledge of anatomy, he showed a great number of naked figures; and to this day the picture is known by the name that his contemporaries gave it, as the "Hash of Frogs." Certainly, it was not the dignity of the composition which won for it that name; and if the froggy portions of the Library façade should be chiselled away, in deference to the modesty of the City Council, we are disposed to believe that the general effect of the composition would be decidedly improved.

AT the Eighth Annual Convention of the National Association of Builders, held in Boston this week, several things of general interest transpired, and we regret not to be able to give more space to a discussion of them. In the first place, in his welcoming address, Mayor Matthews took occasion to inform his hearers that neither visitor nor resident need have any fear that the Boston Public Library would be transformed from "a monument of art to a monument of folly" by the carrying out of the recommendation of the Common Council, to which we refer above. In the next place, President Hersey's annual address laid a good deal of stress on two important matters, one that the attack of the trades-unions on the apprenticeship system should be nullified by fostering the growth of trade-schools; the other, that all difficulties between master and man, and between one contractor and another, should invariably be submitted to arbitration under a properly organized and generally recognized system. Hon. Carroll D. Wright, in his address, also devoted himself to the discussion of the latter question, showing that, to be beneficial and enduring, the system of arbitration adopted must, so far as possible, ensure mutuality of benefit. Later in the session a "form of arbitration" was unanimously adopted, which runs to the effect that the two organizations to which the employers and employés respectively belong bind themselves to submit all matters of mutual concern to a joint committee and agree to abide in every case by the decision by them given; that neither strike nor lockout may be adopted by either party, and that all questions shall be settled by the members of that trade alone whose interests are affected by the question at issue.

APROPOS of another resolution that was reported, it occurs to us to make a suggestion. This resolution looks to a change in the constitution and by-laws, by which biennial may be substituted for annual meetings. A similar suggestion has been more than once made as to the conventions of the American Institute of Architects, the reason for the proposed changes presumably being the same in each case. Now, if the architects and the master-builders could hold biennial conventions, arranged so as to fall on alternate years, and if the officials of one organization could regularly attend the meeting of the other organization in an official capacity, with the privilege of the floor when matters come before the meeting on

which it was desirable to have both sides of a question properly and officially presented, we believe that in a short time many of the causes of complaint, which on one side or the other now exist, would be removed, since they exist largely as relics of antiquated methods or because of some misconception which could and ought to be explained away. Thus at the convention this week sundry resolutions were introduced, asking that steps should be taken to ask architects to do this, that or the other in a way different from their present methods, the changes being presumably for the benefit of the builders, no matter how they might affect the architects or their clients, and if the architects had had official representatives present the impossibility of making the change could have been at once clearly stated; or in the other case they could have had explained to them how hard the present practice bore on the builders and how simply a beneficial change could be made. We think this suggestion is both good and practicable, and altogether in harmony with the general tendency of the times, which is everywhere seeking to eliminate friction and promote harmony and confidence in all who are so closely allied as are architects, master-builders and mechanics.

LA REVUE INDUSTRIELLE gives some further particulars in regard to the experiments of M. Raoul Pictet on the resistance of animals to extreme cold. It will be remembered that M. Pictet froze microbes in a lump of solidified atmospheric air, at a temperature of about 323° below the Fahrenheit zero, and found that, when thawed out, they were as lively as ever. It seems that, besides bacteria, he has exposed diatoms, spores, micrococci, and certain tiny seeds to the same intense cold, and has found in all cases, that after being thawed out, they carried on their vital processes as actively as if they had had no unfavorable experience. The microscopic spores produced their usual series of bacilli; the diatoms sent out their threads of gelatinous protoplasm; and the seeds germinated and sent out vigorous little plants. Among the organized ferments, the ptomaines and the vaccine virus alone were found to be affected by this degree of cold, the vaccine virus becoming sterile. In the same way as the seeds and germs of tiny plants, the eggs of animals of a similar rank in the scale of development defy, we are told, the most intense cold yet produced. Unfortunately, the precise animals to whom the eggs belonged is not specified, but we know that the eggs of moths, even of large and highly organized varieties, are exposed all winter on the bare trunks of trees, to the utmost rigor of our terrestrial climate, without the slightest injury, so it is conceivable that those of microscopic creatures might bear a far greater degree of cold. M. Pictet, who appears to be something of a speculative as well as an experimental philosopher, is rather perplexed by these discoveries. He has found that all chemical reaction ceases at a temperature of about 150° below the Fahrenheit zero, so that the chemical theory, according to which vitality is the effect of oxidation, fails to account for the persistent life of the little organisms; and he takes refuge in the explanation that "Life is a manifestation of the laws of Nature, like gravitation." He considers that, like force, life cannot be destroyed, but is always ready to manifest itself whenever it finds a suitable organization through which it can act. "If," he says, "one could make a complete organized structure out of lifeless matter, the physico-chemical conditions would be sufficient to develop in it all the vital phenomena of vegetative life." This is rather an extensive induction from the observation that germs and eggs resist extreme cold, and M. Pictet himself qualifies it by saying that phenomena of a psychical order can neither be produced nor explained by the mere movement of organized matter; but he does not specify where the line between vital and psychical phenomena is to be drawn.

EVERY one will regret to hear that the Fine Arts Building at Chicago, the only one of the great palaces of the White City which was intended to be permanent, has been examined by the Underwriters, and pronounced unfit to receive the exhibits which it has been intended to place there, and which are valued at about three million dollars. Whether the building will be reconstructed, or removed, to make way for a new one, remains to be seen, but it would be a pity to lose entirely one of the most beautiful of the structures that have for the past year glorified Jackson Park.

parts, or hard plaster. The frame should be so laid out as to carry off all water flowing down the front and keep it from lodging in the joints and behind any of the framing. If this is too costly, then the wood frame should be only a sham dividing the front inch of a solid concrete wall into small spaces. In any case the danger from frost is very great and must be carefully guarded against.

(To be continued.)

WHAT BUILDINGS COST PER CUBIC FOOT.

WITH materials and labor at the same price, two buildings of the same character, although of different sizes, will be found to cost approximately the same per cubic foot; hence the cost of a proposed building may be quite closely estimated by multiplying its cubic contents by the known cost per cubic foot of a similar structure built in the same locality. Any general change in the price of materials and labor would of course affect the cost per cubic foot in the same ratio.

Unfortunately, when one wishes to estimate the cost of a proposed building in this way, especially if he has been practising but a short time, he is generally unable to ascertain what price similar buildings have cost per cubic foot, or else is put to considerable trouble to determine it.

To remedy this inconvenience the writer has undertaken to compile a list of representative buildings, giving the price which they cost per cubic foot. Owing to the reluctance of owners to have the cost of their buildings made public, the writer has found his task rather a difficult one, but through the kindness of several architects he has been able to obtain the necessary data for a sufficient number of buildings in different localities to give a pretty fair idea of the cost of the usual class of buildings. In some cases the cost was not furnished by the owner or architect, and wherever the word "about" is used it is to be understood that such was the case, although the variation from the exact cost is probably very slight. In most cases and particularly those marked by an asterisk, the cost does not include the architect's fees.

In preparing such a table it is difficult to make an absolutely fair comparison on account of the difference in the style of the building and the method of computing the cubic contents. When it was known, the way in which the cubic contents was measured is stated: in the buildings designed by Mr. R. W. Gibson, the cubic contents was computed usually from the basement floor or if there was a cellar, from half the depth of the cellar. At the top the limit was taken at the top of a flat roof, or half-way up a sloping roof, usually including all the habitable height and excluding mere air-spaces.

It will be seen from this table that the cost of business blocks of the same character, in the same locality, and built at about the same time varies but little, the most variation in any class of buildings being in the cost of dwellings.

The date opposite the architect's name indicates the year in which the building was erected or completed.

BUILDINGS DESIGNED BY ADLER & SULLIVAN, ARCHITECTS.

Date.	Located in Chicago.	Width.	Length.	Average height.	Cubic contents.	Cost per cubic foot.
1879	Central Music Hall, Randolph and State Sts.	104	150	80	1,248,000	14.4 cts.
1881	Borden Block, Offices, Randolph and Dearborn Sts.	80	100	105	840,000	14.9 "
1881	Brunswick & Balke Factory, Superior St.	60	254	80	1,219,200	5.4 "
1882	" " " " Huron St.	65	100	90	565,000	6.2 "
1882	L. Rosenfeld, Stores and Flats, Washington and Halstead Sts.	84	152	67	885,456	10.7 "
1882	Hammond Library, Ashland Ave.	47	65	60	183,300	19. "
1883	Wright & Lawther, Oil-mill, Polk St.	30	100	65	520,000	6.8 "
1883	R. Kniesly, Stores and Flats, Madison St.	35	76	52	138,320	11.2 "
1884	A. Kniesly, Factory, West Monroe St.	90	218	72	1,412,640	6.1 "
1884	J. W. Scoville, Factory, Desplains St.	69	111	91	697,000	6.4 "
1885	Zion Temple, Synagogue, Ogden Ave.	65	115	64	478,400	7.9 "
1887	Auditorium Building, Congress St.	175	362	144	9,128,744	36. "
1887	Standard Club-house, Michigan Ave.	64	161	88	916,917	12.9 "
1888	A. Loeb & Bro., Warehouse, Michigan St.	20	90	69	123,300	12.9 "
1889	Jewish Training-school, Judd St.	60	91	82	447,854	10.9 "
1891	A. Loeb & Bro., Flats, Randolph and Elizabeth Sts.	46	182	65	499,531	10.4 "
1891	Meyer Building, Store, Franklin and Van Buren Sts.	120	168	104	2,009,700	9.6 "
1891	J. W. Oakley, Warehouse, La Salle and Michigan Sts.	101	114	121	1,390,313	6.9 "
1891	Schiller Building, Randolph St.	80	182	167	2,433,440	30.8 "
1891	Stock Exchange Building, La Salle and Washington Sts.	101	181	189	3,493,500	33.2 "

¹ Sometimes called the German Theatre, 17 stories, skeleton construction, faced with terra-cotta. Rich marble work. Theatre occupies about 4 stories. Offices above.

² 13 stories, flat roof, skeleton construction, rich terra-cotta facing.

The Rookery Building, Chicago, Ill. — Burnham & Root, architects. (1886.) Situated corner La Salle and Adams Streets. 177' x 167', eleven stories high, flat roof. Masonry construction, iron and steel interior, fireproofed. Contains an inner court 62' x 71'. There are 550 office-rooms and spacious quarters for three banking institutions. Interior finish,

throughout, antique oak. Italian marble floor and wainscoting in corridors. Ten passenger-elevators, one freight-elevator. Cost per cubic foot,¹ figured from base of foundation and exclusive of court..... 32 cts.

Monadnock Building, Chicago, Ill. — Burnham & Root, and Hollabird & Roche, architects. Sixteen stories, 68' x 400'. Average height of roof above sidewalk 205 feet. Depth of footings below sidewalk 14 feet; 300 feet at north end ordinary brick masonry construction, 100 feet at south end, skeleton construction. Rich marblework; 16 elevators in building. Cost per cubic foot above basement-floor..... 42½ cts.

Rialto Building, Chicago, Ill. — Burnham & Root, architects. Said to have cost..... 27 cts.

Masonic Temple, Chicago, Ill. — Burnham & Root, architects. (1891.) Situated on corner of State and Randolph Streets. 170' x 113', twenty stories, pitch roof. Height from sidewalk to top of coping 274 feet. Street fronts are of dressed granite to sills of fourth-story windows; above, of brick and terra-cotta. Skeleton construction, diagonal bracing; entirely fireproof. Rich marble and metal work. 14 passenger-elevators. Cubic contents 5,436,000 cubic feet, exclusive of the court. Cost is supposed to be about \$3,150,000, which makes the cost per cubic foot..... 58 cts.

Chamber of Commerce Building, Boston, Mass. — Shepley, Rutan & Coolidge, architects. (1891-2.) Occupies a triangular-shaped plot, at the junction of Central Wharf with India Street. The ground-area is 11,400 square feet. The height from the sidewalk to the top of the cornice is 94 feet, and from the sidewalk to the top of the conical roof is 170 feet. There are seven stories besides the basement. The walls are of light-pink granite, with black slate roof. Fireproof construction, high marble-work, oak-finish. Building is supported by piles; footings 10 feet below grade. Cubic contents above basement-floor, to base of conical roof, 1,311,000 feet. Cost per cubic foot..... 29 cts.

New England Life Insurance Building, Boston, Mass. — Bradlee & Winslow, architects, (187-). Built of granite, of old-fashioned construction, entirely fireproof throughout, and with all interior mouldings of Keene cement. Is said to have cost..... 60 cts.

The Hemmenway Building, Boston, Mass. — Bradlee, Winslow & Wetherell, architects. Situated at the corner of Tremont and Court Streets, with pressed-brick walls, heavily trimmed with Longmeadow stone. Is said to have cost..... 43 cts.

Board of Trade Building, Montreal, Can. — Shepley, Rutan & Coolidge, architects. (1892-3.) Ground-area 22,019 square feet. Average height of roof above sidewalk 83½ feet. Average depth of footings below sidewalk 12 feet. Cost per cubic foot..... 20 cts.

Ten-story Office-building, New York, N. Y. — R. W. Gibson, architect. Fireproof; massive granite-front; extra foundations, machinery and fixtures and rich marblework, with expensive finish. Cost per cubic foot..... 60 cts.

Ten-story Office-building, New York, N. Y. — R. W. Gibson, architect. Fireproof; stone front; machinery, fixtures, etc., and simple marblework. Cost..... 50 cts.

Seven-story Office-building, New York, N. Y. — R. W. Gibson, architect. Fireproof; two massive stone fronts; usual machinery, plumbing, fixtures, etc., complete. Cost per cubic foot..... 37 cts.

Six-story Office-building, New York, N. Y. — R. W. Gibson, architect. Three brick and terra-cotta fronts. Non-fireproof, but with metal lathing, terra-cotta furrings and improvements; including plumbing, machinery, etc. Cost per cubic foot..... 26 cts.

A similar building with one front. Cost..... 24 cts.

Two and Four Story Office-building, New York, N. Y. — R. W. Gibson, architect. Fireproof; two granite fronts; plumbing, machinery, etc., rich marblework. Part of building one large hall, 60 feet high. Cost per cubic foot..... 47 cts.

Herald Building, New York, N. Y. — McKim, Mead & White, architects. (1893.) Stands upon a trapezoidal piece of ground 200' x 140' and bounded by Broadway, Sixth Avenue, Thirty-fifth and Thirty-sixth Streets. Building is two stories high, with pitch roof, containing an attic in which are the composing-rooms. The basement extends under the sidewalk on all sides, and great pains were taken to exclude moisture below grade. Walls and partitions are of stone and brick; floors of iron beams and tile arches. Building intended solely for the offices and publication rooms of the *Herald*. Total cubic contents above basement-floor about 1,090,000 feet. Cost per cubic foot, about..... 46 cts.

Mr. George B. Post, architect of many of the tall office-buildings in New York City, writes: "I can only state in general that varying with the market-rate of materials and labor, large office-buildings which I have erected have cost from 30 to 45 cts. per cubic foot, including all excavations."

¹ From *Ornamental Iron*, November, 1893.

Chamber of Commerce, Cincinnati, Ohio.—H. H. Richardson and Shepley, Ruten & Coolidge, architects. (1887-8.) Ground-area 15,000 square feet. Highest part of roof from the ground 193 feet. Depth of footings 24 feet. Masonry construction, granite facings. Cubic contents enclosed by walls and roof above sidewalk 2,310,864 cubic feet. Cost per cubic foot..... 26 cts.

Wainwright Building, St. Louis, Mo.—Adler & Sullivan, and Chas. K. Ramsay, architects. (1890.) Situated corner of Seventh and Chestnut Streets; 10 stories, flat roof, 127½' x 117½' on ground, 151 feet high. Skeleton construction, stone-facing first and second stories, rich terra-cotta work above. 210 offices, 4 elevators. Cubic contents 2,186,178 feet. Cost per cubic foot..... 24 9 cts.

Union Trust Building, St. Louis, Mo.—Adler & Sullivan, and Chas. K. Ramsay, architects. (1892.) 14 stories, flat roof, 128' x 84' on ground, 183 feet high. Skeleton construction. Rich terra-cotta work. Cubic contents 1,968,200 feet. Cost per cubic foot..... 27.9 cts.

Equitable Life Insurance Co.'s Building, Denver, Colo.—Andrews, Jaques & Rantoul, architects. (1892.) Situated corner of Seventeenth and Stout Streets; 125' x 200', 9 stories high, flat roof; height of roof above grade, about 128 feet. Walls are of granite in first and second stories and of white brick with buff terra-cotta trimmings above. Average thickness of walls 3 feet. Interior construction, steel beams and Z-bar columns, thoroughly fireproofed. Partitions of terra-cotta lumber. No columns in external walls. 358 tons of steel beams in the footings. Main corridor, first story, wainscoted 9 feet high in Sienna marble; ceiling vaulted and covered with mosaic. All corridors tiled and wainscoted. Cost per cubic foot above basement floor, about..... 42 cts.

Ernest & Cramer Building, Denver, Colo.—Edbrooke & Marean, architects. (1890.) Situated corner of Seventeenth and Curtis Streets; 100' x 125', 8 stories high, flat roof. First story, iron and plate-glass store-fronts. Slow-burning mill-construction. Pressed-brick fronts with stone trimmings. Hardwood finish. No elaborate marblework. Three elevators. Cost per cubic foot above basement-floor..... 17 cts.

Masonic Temple, Denver, Colo.—Edbrooke & Marean, architects. (1889.) Situated corner of Sixteenth and Welton Streets; 100' x 125', 5 stories, flat roof. Height of roof above grade 103 feet. The first story is for stores, second and third for offices, above for society rooms. Ordinary construction; brick walls, faced with red stone; hardwood finish. No marblework, two elevators. Cost per cubic foot above basement-floor..... 19 cts.

Crocker Building, San Francisco, Cal.—A. Page Brown, architect. (1890.) Situated at the intersection of Post, Montgomery and Market Streets. Triangular plan, ground-area 12,700 square feet; street frontage 345 feet; 10 stories, flat roof. Height of roof above grade 165 feet. Average depth of footings below sidewalk 20 feet. Building is steel-skeleton construction, thoroughly braced and fireproofed, and elaborately finished in marble, etc. Three passenger-elevators, one freight-elevator. Cost per cubic foot above basement-floor, about..... 63 cts.

Endicott Building, St. Paul, Minn.—Gilbert & Taylor, architects. (1887-9.) Fronting on Robert and Fourth Streets, but not on the corner. Irregular plan; ground-area 28,510 square feet; 7 stories, flat roof. Average height of roof above sidewalk 100 feet. Average depth of footings below grade 15 feet. Fireproof pressed-brick fronts, marble wainscoting; five elevators. Cost per cubic foot, bottom of footings to top of cornice..... 29 cts.

Four-story Office-building, Rhode Island.—R. W. Gibson, architect. Fireproof, usual plumbing, heating-plant, fixtures, etc., rich marblework; stories moderate height. Cost per cubic foot..... 38 cts.

Three-story Office-building, Connecticut.—R. W. Gibson, architect. Fireproof; two stone-fronts; usual plumbing, heating-plant, fixtures, etc., rich marblework; stories of moderate height. Cost per cubic foot..... 50 cts.

Three-story Block, Denver, Colo.—F. E. Kidder, architect. (1890.) Stores in first story, lodging-rooms, second and third stories. Iron and plate-glass store-front. One front, stone-facing; flat roof. Ordinary brick and timber construction; steam-heat; substantial plumbing; pine-finish, painted. Cost per cubic foot, basement-floor to roof..... 8½ cts.*

HOTELS.

Fourteen-story Hotel, New York, N. Y.—R. W. Gibson, architect. Brick and terra-cotta front, skeleton construction, with riveted steel frame, thoroughly fireproofed; usual plumbing, machinery, etc. Cost per cubic foot..... 44 cts.

Brown-palace Hotel, Denver, Colo.—Edbrooke & Marean, architects. (1892.) Occupies a triangular block, bounded by Broadway, Seventeenth and Tremont Streets, the total frontage being 700 feet; 9 stories, flat roof. All rooms face the street, and open from a corridor surrounding a well-room extending the full height of the building and covered with a skylight. There are 350 guest-rooms, 160 private bath-rooms

and 17 public toilet-rooms, all tiled. The building is steel construction inside, with brick walls faced with red stone. No columns in walls. Thoroughly fireproof throughout, and elaborately finished in onyx and bronzed iron. Is provided with electric-light, ice and refrigerator plant, laundry, garbage-crematory, etc. Four elevators. Cost per cubic foot above basement-floor..... 30 cts.

CLUB BUILDINGS.

Denver Athletic Club Building, Denver, Colo.—Varian & Sterner, architects. (1890-1.) Located on Glenarm Street between Thirteenth and Fourteenth Streets; 96 feet front by 125 feet deep, 4 stories, flat roof; one front. Thoroughly equipped with swimming and Turkish baths, gymnasium, hand-ball room, billiard-room, social rooms, etc.; swimming-pool 30' x 40', 9 feet deep. Basement walls and partitions finished in pressed-brick; social rooms in oak, other portions of the building in pine. Brick walls, wood construction. One elevator. About two thirds of the building devoted to bathing and athletic purposes. Cost per cubic foot above basement-floor..... 18 cts.*

Denver Club Building, Denver, Colo.—Varian & Sterner, architects. (1887-8.) Situated corner of Seventeenth and Glenarm Streets; size 60' x 80' with L 40' x 40'; 3 stories, and high pitch roof, covered with slate. Walls stone ashlar, 4 sides. Interior finished in hardwood in principal rooms. Wood construction. Cost per cubic foot from basement-floor to 10 feet above attic (unfinished) floor..... 24 cts.

LIBRARIES.

Public Library, New London, Conn.—Shepley, Ruten & Coolidge, architects. (1889-90.) One-story stone building. Ground-area, 3,407 square feet; height of cornice above sidewalk 25 feet; highest part of roof above sidewalk, 47 feet; average depth of footings 7 feet. Cost per cubic foot, 36½ cts.

Howard Memorial Library, New Orleans, La.—Shepley, Ruten & Coolidge, architects. (1888.) Ground-area 6,072 square feet; height of cornice above grade 25 feet; highest point of roof 47 feet above grade; depth of footing 8½ feet. Cost per cubic foot..... 44 cts.

HOSPITALS.

Fireproof Hospital-building, New York, N. Y.—R. W. Gibson, architect. 7 stories, pressed-brick front, stone trimmings. Cost per cubic foot, including plumbing, machinery, thorough heating and ventilating plant, much marble and tiling..... 40 cts.

Six-story Hospital-building, New York, N. Y.—R. W. Gibson, architect. Pressed-brick front, stone trimmings. Part fireproof and part not fireproof, but with metal lathing, terra-cotta furrings and improvements; plumbing, steam-plant, etc. Cost per cubic foot..... 32 cts.

MISCELLANEOUS BUILDINGS.

Hill Theological Seminary, St. Paul, Minn.—Cass Gilbert, architect. Six buildings grouped around a quadrangle. Average height of dormitory buildings, 50 feet. Average depth of footings, 8 feet. Ordinary brick masonry construction. Library, gymnasium, heating-building and all staircases fireproof with steel beams and terra-cotta arches; elsewhere wooden joist. All corridor-walls of exposed brick; oak finish. Cost per cubic foot above grade..... 11 cts.

Wingate Hall, State College, Orono, Me.—F. E. Kidder, architect. (1892.) Size of building, 82' x 62'; 3 stories and basement; deck-roof slated and tinned, copper metal-work. Contains recitation and drawing rooms for the engineering departments, and Y. M. C. A. Hall. Basement devoted to heating and storage. Brick walls, selected common brick-facing, granite trimmings. Inside partitions principally of brick, hall and stairway wire-lathed. Cost per cubic foot above basement-floor, not including roof space..... 10 cts.*

Grammar School-building, Denver, Colo.—F. E. Kidder, architect. (1891-2.) Two-story brick building, about 88' x 70'. Basement-floor 4 feet in ground. Deck roof, covered with shingles and tin. \$15 pressed brick. Eight rooms 27' x 32'. Play-rooms in basement. Smead-system heating and ventilation. Brick partitions. Cost per cubic foot, basement-floor to second-story ceiling..... 9½ cts.*

Grace M. E. Church, Cambridgeport, Mass.—F. E. Kidder, architect. (1886-7.) Two-story wooden building, 58' x 70' with projections. Tower and spire 109 feet to base of final. Slate roof, copper metal-work. Cost per cubic foot including furnaces, pews, frescoing and gas-fixtures above cellar-floor, but not including roof space..... 8¼ cts.*

Christ M. E. Church, Denver, Colo.—Kidder & Humphreys, architects. (1889-91.) Two-story stone church, 50' x 90' with projection. Stone tower, 71 feet high with frame spire above, 108 feet high, covered with shingles. Total height to top of final 190 feet. Texas pine finish in first story, oak in second story. Price per cubic foot (above cellar-floor, but not including roof space) including steam-heat, pews, frescoing, glass, etc..... 20 cts.*

DWELLINGS.

City dwellings in Chicago, designed by Adler & Sullivan.
Cost per cubic foot, from..... 17 to 20 cts.

Of dwellings designed by the writer, the average cost of 8 and 10 room wooden houses in Boston, in 1886, per cubic foot of habitable space including cellar, was about..... 11 cts.*

In Denver, Colo., the cost of a first-class stone house, with hardwood finish, steam-heat, extra plumbing, decorations, etc. complete, is about..... 27 cts.*

Brick houses of 10 rooms, pine-finish, furnace-heat, good plumbing, etc. Cost per cubic foot above cellar-floor, but not including unoccupied roof space, about..... 14 cts.*

Cheap eight-room brick cottages of one and one-half or two stories, bath-room and furnace, cubic space reckoned from cellar-floor, but not including unoccupied roof space, can be built for..... 10 cts.*

For the cost of United States Public Buildings the reader is referred to a list of the cost per cubic foot of thirty-eight buildings which was published in the *American Architect* of February 5, 1887. F. E. KIDDER.

THE ART OF BOOK AND NEWSPAPER ILLUSTRATION.¹

Church on North Ave., Cambridge, Mass. A. P. Cutting, Architect, Worcester, Mass.

THE best drawing for process reproduction is one that requires little or no touching on the part of the engraver or maker of the blocks; but it is difficult to impress on the artistic mind the necessity of conforming to certain rules. Some cannot draw firm, clean lines at all, and should not attempt them. Few allow sufficiently for the result of reduction and the necessary thickening of some lines.² The results are often a matter of touch and temperament. Some artists are naturally unfitted for line work; the rules which would apply to one are almost useless to another. Again, there is great inequality in the making of the cheap zinc blocks, however well the drawings may be made; they require more care and experience in developing than is generally supposed.

GELATINE RELIEF PROCESS.

Let us look now at the enlargement of a line-drawing which is more difficult to reproduce; a portrait by the late Frank Holl, R. A.

¹ Portions of a lecture by Henry Blackburn delivered before the Society of Arts and published in the *Journal* of the Society.

² All drawings for reproduction should be marked in the margin by the artist as to the amount of reduction intended. It is a useful guide to all concerned in publication.

(drawn on Whatman paper, 4 $\frac{1}{2}$ " x 3 $\frac{3}{4}$ "), in which there are many pale, uncertain and complicated lines which could not be produced well by the process just described. Here a more delicate and sensitive method is necessary to obtain a relief-block. It is called the "gelatine process," or the "Gillot process."

The drawing is photographed to the required size (as before), and the negative laid upon a glass plate (previously coated with a mixture of gelatine and bichromate of potash). The part of this thin, sensitive film, exposed to the light, is absorbent, and when immersed in water swells up. The part protected from the light by the lines of the drawing remains near the surface of the glass. Thus you have a negative from which a metal cast can be taken, leaving the lines in relief as in the zinc process. In skilful hands this process admits of more delicate gradations, and the pale uncertain lines in the drawing before us can be reproduced with tolerable fidelity. The blocks take longer to make, and are double the price—roughly, 1s. per square inch—of the first process described. There is no process yet invented which gives better results from a pen-and-ink drawing for the type-press. These blocks when completed have a copper surface. The reproductions of pencil, chalk or charcoal drawings by the above processes are nearly always failures, as we may see in the best artistic books and magazines to-day. I will refer to them presently.

For those who cannot draw easily with the pen, there are several kinds of grained papers which render drawings suitable for reproduction. The first is a paper with black lines imprinted upon it on a material suitable for scraping-out to get lights, and strengthening to get solid blacks. The drawings thus made can be reproduced in relief like line-drawings, taking care not to reduce the black grain much or it becomes "spotty." Another paper largely used has a white grain, a specimen of which I will show you presently on the screen; and there are other variations of grained papers on which we will not dwell.³

Here the question may arise in many minds, are these contrivances with their mechanical lines for producing effect, worthy of the time and attention which has been bestowed upon them. I think it is very doubtful if much work ought to be produced by these means; and certainly in the hands of the unskilled, the results would prove disastrous. A painter may use them for sketches. Mr. Compton, as you see, can express very rapidly, by scraping out the lights and strengthening the darks, a snow-drift or the surfaces of a glacier. The late C. J. Watson and the French artist, M. Bistagne, have shown us how the white-grained paper can be played with, in artistic hands, to give the effect of a picture in a quarter of an hour.

MECHANICAL DOTS.

The increased use of mechanical dots to give shadow and color to a pure line-drawing is always to be regretted, whether it be applied to a necessarily hasty newspaper sketch, or to one of Vierge's handsomely printed illustrations for the "*Pablo di Segovia*." One cannot condemn too strongly this system, so freely used in Continental illustrated sheets, which, in the most skilful hands, seems a degradation of the art of illustration. These dots and lines, used for shadow, or tone, are laid upon the plate by the maker of the block, the artist indicating, by a blue pencil mark, the parts of a drawing to be so manipulated; and as the illustrator has not seen the effect on his own line-drawing, the results are often a surprise to every one concerned. I wish these ingenious contrivances were more worthy of an artist's attention. Nothing but the speed with which a sketch for a newspaper can be thus made seems to excuse its use. Hurry is the secret and the mischief of it all.

Here is an example taken from an English print, by which you see that all daylight has been taken ruthlessly from an open-air sketch. The system is tempting to the hurried illustrator; he has only to draw in line (or outline, which is worse), and then mark where the tint is to appear; and the dots are laid on the zinc plate by the maker of the blocks.

In the enlargements before you [referring to two examples from the *Daily Graphic*; one partly and one wholly covered with dots] it will be obvious that the artist's sketch is injured by this treatment, that, in fact, the result is not artistic at all. Nothing but high-pressure or incompetence on the part of the illustrator can excuse this mechanical appliance to an incomplete drawing. Again I must remind you that these results are not the fault of the "process," or of the "process man." But the system is growing in every direction, to save time and trouble, and is lowering the standard of topical illustrations. And it is this system (*inter alia*) which, I believe, is to be taught in technical schools, where the knowledge of process is taking the place of wood-engraving.⁴

The question is again uppermost in the mind, are such mechanical appliances ("dodges," I venture to call them) worthy the serious

³ Mr. C. G. Harper, in his excellent book on "*English Pen Artists*," has treated of other ways in which drawings on prepared papers may be manipulated for the type-press.

⁴ The rendering of a chalk or pencil drawing into a relief-block, to be printed on rapid machines with inferior paper and ink, is another branch of process which I think the student of art had better not know much about, for the process has never been successful under the best conditions. He would be better occupied in learning drawing on stone, an art which does not come into the scope of these lectures, as it is seldom used in book-illustration and cannot be printed at the type-press. It is well worthy of study now, for the art is being revived in England on account of the greater facilities for printing than formerly. It is possible to obtain excellent results from chalk and pencil drawings in intaglio; photographed and printed as a copper-plate; as may be seen in the specimens by the Autotype Company on these walls.

attention of artists; and can any good arise in imparting such knowledge to youthful illustrators in technical schools? Wood-engraving was a craft to be learned, with a career for the apprentice. *There is no similar career for a lad by learning the "processes" at technical schools;* and nothing but disappointment before him if he learns the mechanism before he is an educated and qualified artist.

It should be mentioned that all wood or steel engravings reproduce easily by the common zinc line process, but the reproductions are apt to lose brightness, and if much reduced break up or become spotty. Mention should be made also of drawing on prepared transfer-paper with autographic-ink, which is transferred to zinc without the aid of photography, a process very useful for rapid and common work; but it is irksome to the artist and not capable of very good results; moreover the drawing has often to be minute, as the reproduction has to be the same size as the original.

HALF-TONE PROCESS.

I now come to the method of reproducing wash-drawings and photographs, on blocks suitable for printing at the type-press, commonly known as the Meisenbach or "half-tone process;" a most ingenious and valuable invention, which, in clever hands, is capable of artistic results, but which in common use has cast a gloom over our illustrations in books and newspapers.

Now, to make these blocks; as there are no lines or whites in a painting, or in a photograph from nature, it is necessary to obtain some kind of grain, or interstices of white, on the zinc plate, as in a mezzotint. So, between the drawing or photographic print to be reproduced and the camera, glass-screens, covered with lines or dots, are interposed, varying in strength according to the light and shade required; thus turning the image of the wash-drawing practically into "line," with sufficient interstices of white for printing purposes.

Thus, all drawings in wash, chalk, pencil, etc., that will not reproduce by the direct line processes, already referred to, are treated for printing at the type-press, and thus the uniform, monotonous dullness with which we are all familiar, pervades the page.

The artist who draws in wash with body-color, or paints in oils in monochrome, for this process, will see at once that his high lights will be lost, and his strongest effects neutralized, under this effect of gauze; in short, that there is no longer any breadth of white or black in his picture; and so, for pictorial purposes, the illustrator who draws in wash has to *force his effect*, and exaggerate his lights and shades, avoiding too delicate gradation, and in his different tints keeping, so to speak, to one octave instead of two. Thus, also for this process, to obtain brightness and cheap effect, the illustrator of to-day often avoids backgrounds altogether.

Some excellent results (which I will show you presently on the screen) may be obtained by experienced and practised draughtsmen, if their work is well reproduced with a fine grain, and printed carefully on good paper. But where the block has to be prepared for printing, say 5,000 an hour off rotary machines, a coarser grain has to be used, producing the "Berlin-wool pattern" effect you see before you.

There are many ways by which drawings unsuitable for the relief-toned processes are made available. Great advances have been made in the "screening" of pencil drawings where a great deal of white has to be left. You may trace the screening on every part of the enlarged proof before you. [Reproduction of a pencil sketch by Mr. Melton Prior.] These two wash-drawings by Mr. S. Begg and Mr. Greville Manton, which have appeared lately in the *Black and White* newspaper, are good examples of the way to draw for reproduction: the artists have, you will notice, met the process half way, they have been careful to use broad, clear, firm washes, and they have done them with a certain hand, the result of experience. If, in the endeavor to get the best results out of a few tones by the mechanical process, their work lacks some artistic qualities, it is almost a necessity; but the tendency of this most modern form of illustration is to think too much of *technique*. But with the utmost care and patience on the part of the artist, these wash-drawings, rendered by the half-tone process, are uncertain and artistically incomplete. It is more suitable for the rendering of sketches. Of the illustrators who use this process in a more free and easy way we will now take an example [an enlarged wash-drawing was shown upon the screen].

Here truths of light and shade are disregarded, figures stand out in unnatural blackness against white paper, and flat mechanical shadows are cast upon nothing. Only sheer ability on the part of a few modern illustrators has saved these coarse ungainly sketches from universal condemnation. But the splashes, and spots, and stains, which are taking the place of more serious work in illustration, has become a vogue in 1893. The sketch is made in two or three hours, instead of a week; the process is much cheaper than wood-engraving. The public is satisfied with a sketch where formerly a finished illustration was required, if the subject be treated dramatically and in a lively manner. If it comes out an unsightly smear on the page, it answers the purpose of topical illustration, and apparently suits the times. It is scarcely too much to say that this example would not have been tolerated a few years ago. But it is the taste of the times to which the modern illustrator has adapted himself; and it is little short of a revolution in illustration, of which we do not yet see the end. One thing we must continually bear in mind, that these hastily produced blotches called illustrations, which disfigure the pages of so many books and magazines, are the result of want of care on the part of the artist rather than of the maker of the blocks. The latter are, according to my experience, the most patient and painstaking of operatives.

The result of all this—a very serious one to the artist as far as we can see ahead—is the gradual substitution of photographs from life for any other form of illustrations. The Meisenbach reproduction of a photograph I now show you answers the purpose of the editor of a newspaper to fill a page of his paper, where formerly artists and engravers would have been employed. The excuse for it is that the details of the dress are so well rendered on the block as to answer the purpose of a fashion-plate—apparently a most important matter.

Now let us see what becomes of a very artistic photograph when put through the half-tone process. Here is the photographic print from a painting by M. Jules Lefebvre [portrait of girl reading, shown on the screen]. This excellent silver print, full of delicate gradations and strong effects, appears on the plate through the film of gauze, dull, flat and comparatively uninteresting; but the expression of the original is given with more fidelity than could be done by any ordinary wood-engraving. To touch this on the negative and bring out the lights and accents of the picture is the common thing to do by the makers of the blocks; but it is a



House of James L. Breese, Esq., Tuxedo Park, N. Y. R. H. Robertson, Architect.

hazardous process at the best, when dealing with the copy of a painting. I mention it to show where handwork in the half-tone process first comes in. The block, when made, is also often touched-up by an engraver in places, especially where spotty or too dark; on this work many who were formerly wood-engravers now find employment.

But the ideal illustration by process, whether from a line-drawing, wash, or photograph, it cannot be repeated too often, is the one which requires the least manipulating on the part of the maker of the block, who has seldom, or never, the opportunity to attend to it properly. In the case of the reproduction of photographs, especially, which we are now considering, much may be done by working up a platinotype print before giving it out to be made into a block. Much depends here upon the artistic knowledge of editors and publishers, who have it in their power to produce good or bad illustrations from the same original. The makers of these blocks being confined to time and price, are practically powerless.

Here let us pause for a moment to consider the material of which one number of an illustrated paper is made up, and how far the artist and wood-engraver has part in it. It will be instructive from an economic point of view. I take a copy of *Sketch* because it is a typical and quite "up to date" publication, vieing in circulation and importance with the *Illustrated London News*, both published by the same proprietors. In one number there are upwards of 30 pages, 10 being advertisements. There are in all 151 illustrations, of which 63 appear in the text part, and 88 in the advertisement pages. Out of these text illustrations, 24 are from original drawings or sketches. Next are 26 photographs from life (several being full pages), and 13 reproductions from old engravings, etc., reproduced by mechanical processes—in all 63. Some of the pages reproduced from photographs are undeniably good, and interesting to the public, as is evidenced by the popularity of this paper alone. In the advertisement portion are 88 illustrations (including many small ones), 85 of which have been engraved on wood; a number of them

are electrotypes from old blocks, but there are many new ones every week. The reason for using wood-engraving largely for advertisements is, that wood blocks print more easily than "process," when mixed with the type, and print better (being cut deeper on the block), where inferior paper and ink are employed. But this class of wood-engraving may be summed up in the words of one of the craft to me lately:—"It is not worth £2 a week to anybody." (I will refer to the better class of wood-engraving, when speaking of books next week.)

Thus, it will be seen that, in the "text" part of this newspaper, two-thirds of the illustrations have been produced without the aid of either artist or engraver!

To turn to other subjects where the photographer is the illustrator. The photographer goes down a mine with his apparatus, and takes a series of views of the workings, which could probably have been done by no other means. Under most difficult circumstances he sets his camera, and by the aid of the magnesium flash-light gives us groups of figures at work amidst gloomy surroundings. Whether these are not both artistic and valuable as illustrations I leave you to judge. [Here two slides, taken in the Cambrian lead-mines by Mr. J. C. Burrow, of Camborne, were shown, and others were exhibited on the walls.] The remarkable part, artistically, is the good color and grouping of figures. One great value of these illustrations consists in the clear definition of detail. These photographs are shortly to be published in a book by Mr. Burrow and Mr. Thomas.

Another instance of the use of photography in illustration: Mr. Frederick Villiers, the special artist at Chicago for the *Black and White* newspaper, made a startling statement lately in this room. He said that out of some 150 subjects which he took in Chicago not more than half-a-dozen were drawn by him; all the rest being "snapshot" photographs. Some were very good, could hardly be better, the result of many hours' waiting for the favorable grouping of figures. That he would redraw some of them with his clever pencil for this newspaper is possible, but observe the part photography plays in the matter. I could mention many instances where the photographer and his models are producing illustrations of a dramatic kind, a system which cannot be ignored. (In America a novel has been thus illustrated both in figure and landscape.)

The last example of the photographer as illustrator, which can be given here, is where a photograph from life engraved on wood is published as a vignette illustration. [Slide from the *Graphic* of October 28, 1893.] It is worth observing, because it has been turned into line by the wood-engraver, and serves for printing purposes as a popular illustration. The original might, perhaps, have been more gracefully posed, and the effect may be to a certain extent, a "fluke," but it is pretty as a vignette, and pleases the public. There are hundreds of such subjects now produced by the joint aid of the photographer and the process engraver.

Here we may observe that it is not the artist and the wood-engraver who are "working hand-in-hand" in the production of the great majority of illustrations, as in America, but the photographer and the maker of process-blocks. This is significant. Happily for us there is much that the photographer cannot do pictorially. But the photographer is, as I said, marching on and on, and the line of demarcation between original and photographic illustrations is less marked than formerly.

The photographer's daughter goes to an art school, and her influence is shown clearly in the exhibitions of the photographic societies. This influence and this movement is so strong—and vital to the artist—that I feel it cannot be emphasized too much. The photographer is ever in our midst, correcting our drawing with facts and details which no human eye can see, and no one mind can take in at once.

Of the obligations of artists to photographers a book might be written. The benefits are not, as a rule, unacknowledged; nor are the bad influences of photography always noticed. That is to say, that before the days of photography, the artist made himself acquainted with many things necessary to his art, for which he now depends upon the photographic lens; in short, he uses his powers of observation less than he did a few years ago. That the photographer leads him astray sometimes, is another matter.

"Whatever developments may await the art of photography," says Mr. William Small in 1893, "it will never take good work out of a good artist's hands." In line work (the best and surest for the processes) photography can only be the servant of the artist, not the competitor—and in this direction there is much employment to be looked for. But in whatever material or style, newspaper illustrations, to hold their own, must be of the best. Let them be as slight as you please, if they be original and good. At present we are casting off—ungratefully it would seem—the experience of the life time of the wood-engraver, and are setting in its place an art half-developed, half-studied, full of crudities and discords. The illustrations which succeed in books and newspapers succeed, for the most part, from sheer ability on the part of the artist; they are full of ability, but, as a rule, are bad examples for students to copy. "Time is money" with these brilliant executants; they have no time to study the value of a line, nor the requirements of the processes, and so a number of drawings are handed to the photo-engravers—which are often quite unfitted for mechanical reproduction—to be produced literally, in a few hours. It is an age of vivacity, daring originality, and reckless achievement in illustration.

"Take it up, look at it, and throw it down," is the order of the day. But there is no reason, but laziness, why the work done "to look at," should not be as good as the artists can afford to make it. The manufacturer of paper-hangings or printed cottons will often print only a limited quantity of one design, no matter how beautiful, and then go on to another. So much the better for the designer; but he would not keep employment if he did not do his best, no matter whether his work is to last for a day or for a year. The life of a single number of an illustrated newspaper is a week, and of an illustrated book about a year.

The young illustrators on the *Daily Graphic*—notably Mr. Reginald Cleaver—obtain the maximum of effect with the minimum of lines. Thus Caldecott worked, spending hours sometimes, studying the art of leaving out. Charles Keene's example may well be followed, trying drawing after drawing, no matter how trivial the subject, until he was satisfied that it was right. "Either right or wrong," he used to say, "'right enough' will not do for me."

Another influence on modern illustrations—for good or bad—is the electric-light. It enables the photographic operator to be independent of dark and foggy days, and to put a search-light upon objects which otherwise could not be utilized. So far, good. To the illustrator this aid is often a doubtful advantage. The late Charles Keene (with whom I have had many conversations on this subject) predicted a general deterioration in the quality of illustrations from what he called "unnatural and impossible effects," and he made one or two illustrations in *Punch* of figures seen under the then—(ten or fifteen years ago)—novel conditions of electric street lighting, one of which I will show you on the screen. [Illustration of a gentleman who has been dining, returning home through a street lighted by electric lamps.] Charles Keene's predictions have come true—we now see the glare of the magnesium-light on many a page, and the unthinking public is dazzled every week in the illustrated sheets with these "unnatural and impossible effects." Thus it has come about that what was looked upon by Charles Keene as garish, exaggerated, and untrue in effect, is accepted to-day by the majority of people as a lively and legitimate method of illustration.

PROCESS-BLOCK MAKERS.

I must mention one more influence on the young illustrator. The "process man," the teacher and inciter to achievements by this or that process, is not usually an "artist" in the true sense of the word. He knows better than any one else what lines he can reproduce, and especially what kind of drawing is best adapted for his own process. He will probably tell the young draughtsman best what materials to use, what amount of reduction his drawings will bear, and other things of a purely technical, not to say business-like character. Let me not be understood to disparage the work of photo-engravers and others engaged on these processes; on the contrary, the amount of patience, industry, activity and anxious care bestowed upon the reproduction of drawings at the present time is astonishing, and deserves our gratitude. Their work in England is a new industry of an important kind, in which art and craft are bound up together. The photo-engravers are our faithful friends, and are ready to serve us well, if only the public (represented by editors and publishers) will recognize that *good work requires good pay*. The day has passed when "process work" is to be looked down upon as only fit for the cheapest, most inferior and inartistic results.

There is no doubt that the makers of process-blocks are the best instructors as to the results to be obtained by certain lines and combinations of lines; but in the majority of cases they will tell the artist too much, and lead him to take too much interest in the mechanical side of the business. His best protection against this tendency, his whole armor and coat of mail, is to be an artist first and an illustrator afterwards.

This is the sum of the matter. Perhaps some of the examples I have brought here to-night may help us, and lead to a more thorough testing of results by capable men.

EARLY ITALIAN ART.



THE art of Italy from 1300 to 1550, embracing all branches of arts and crafts, is a fascinating subject; and doubtless, the exhibition just opened at the New Gallery, in London, will, by its popularity, repay the committee for their trouble in getting together this wonderful show of examples from the best period of artistic workmanship. Of the pictures it is needless to speak. Are not Lippi and Signorelli, Botticelli, Masaccio and Ghirlandajo always with us, whether we inhabit the New or the Old World? for if pictures are not available, photographs give us a very fair idea of the leading characteristics of these artists. The charm of this exhibition consists in the remarkably fine specimens of armor, church vessels and the jeweller's art—pendants, rings and the like.

One of the finest portable altars now existing is here: it belonged formerly to Cardinal Bessarion, who bequeathed it to the Abbey of Avellanna in Gubbio. During the French occupation of Italy, the abbot sold it to Count Cicagnara, from whom it passed into the hands of Dr. Rock, who bequeathed it to St. George's Cathedral. The slab is of oriental jasper; the border of niello with corner-pieces representing the four Elements as youthful virgins. In the centre of the north border is the Lamb; to the left

St. Michael; to the right, St. Gabriel. In the centre of the south side, a dove with a nimbus. It is probably of the twelfth century. These portable altars were used in troublous times, or when an army was on the march. They were placed upon any ordinary table or shelf; and sometimes were supported by legs which fitted into the slab. This seems to have been the case with the other example exhibited here, a slab of porphyry let into an oak frame, on the under side of which are four holes which seem to suggest sockets for supports. These little portable altars were used in the early years of Christianity in order to prevent the possibility of pollution or contamination of the Sacred Elements.

A silver-gilt chalice by Bartolommeo d'Atri, curiously wrought with vine leaves, was once in the possession of Pope Boniface VIII (1294-1303); and a silver hand-bell, exquisitely chased with foliage and masks, animals and male and female figures in high relief, bears the emblem of Giulio de' Medici, otherwise Pope Clement VII, to whom it belonged.

The sixteenth-century rock-crystal vases bear comparison with those in the Louvre. They are richly engraved in arabesques, and mounted in gold enamel; the handle is formed by a winged dragon, the lip by an eagle's head—the work of Charles Duron, of Paris. Some pendant jewels belonging to Baron Ferdinand de Rothschild are very fine. One is in the form of a marine horse. The body of the animal is one huge baroque pearl with a white enamelled head; the chains are ornamented with rubies and emeralds. Another pendant represents a fish, and another a little parrot perched upon a sort of enamelled cage, jewelled and engraved.

But perhaps the most exquisite piece of goldsmith's work turned out in the sixteenth century by the Italians, is the reliquary belonging to Mr. William Boore, and exhibited some years ago at the South Kensington Museum. It is a portion of some saint's arm-bone, about three inches long, mounted in a framework of hoops of jewelled gold. At each end of the bone is a circular plate exquisitely enamelled in blue, green and gold, and forming the lid of a small receptacle, in which, formerly, a scented pastille was enclosed, as a precaution against unpleasant odors. Standing upright upon the cylinder of bone is a group of the Crucifixion. The figures are in full relief; the Blessed Virgin in blue, St. John in green; and so minute is the workmanship of these *lavoro di piastra* little figures, that, although they measure less than an inch, the expression of the faces and hands is discernable. The cylinder is held up by two jewelled chains, uniting at the top in an arched ornament set with diamonds and rubies, and having a ring by which the whole is suspended. Three pendants, formerly attached to the lower part of the cylinder, are lost. For fineness of workmanship, this jewel is unique. It is said to have been given by Catharine of Braganza to the Compton family of Hartpury in Gloucestershire. Another of Mr. Boore's treasures is the silver-gilt stem of a cup by Cellini; and certainly the exquisite workmanship of the little angels' heads, and the garlands and flowers surrounding them are evidence that the maker was no mean master of the goldsmith's art.

Paintings upon crystal are not common, but the "Adoration of the Magi," belonging to Sir Henry Austin Layard, is a fine specimen, having all the appearance of translucent enamel.

The greatness of a nation in matters artistic consists in its power of adding beauty to all objects of utility; and thus the Dutch, the Germans and even we English have excelled in certain branches of art work. We have all produced a few painters of first-rate order; the Dutch have also been adepts in the silversmith's art, and the Germans in manuscript and miniature painting; wood-carving and embroidery, too, have had masters amongst these nations. But none of them have excelled in all arts as have the Italians. Their bronzes, their carvings, their glass, their falence, their armor, their miniatures, their needlework and their jewelry are as superior to all others in masterly finish and pureness of design, as are their great Venetian and Florentine Schools of Painting. Greece also was perfect, so far as we know, in all branches of art—but then we know so little except by books; so much that was beautiful has perished; and we can only infer by the perfection of their work in marble and bronze, that their pictorial and other arts equalled their sculpture and their jewelry. France, too, comes in her fine Renaissance work very close to Italy; but the child did not equal the mother; for it was from Italy that France gained her inspiration, and it was in Italy that art was a living force. From the knocker upon the outer door to the bellows in my lady's chamber, every inch of the house, every utensil in use, every garment and ornament worn by the owners of the dwelling, was so exquisite a work of art that we moderns dispute for its possession, and are filled with envy when we find ourselves the losers to our friends the happy purchasers. Many of the objects in the exhibition are not only exquisite in art workmanship, but are highly interesting as relics of former times. Here is a medicine-chest containing a secret drawer for antidotes to poisons which belonged to Cosimo de' Medici. In another case is the cetera, a species of guitar, which, originally belonging to Titian, descended to the great singer Mario, and subsequently was in the possession of Rossini, the composer. It is signed by the maker, Gironimo Campi.

A good many of the objects in the celebrated Spitzer Collection, purchased by Mr. George Salting, are here; and in a breastplate of steel, *repoussé* and richly damascened with gold, one may conjure up in imagination the owner of that pink-and-gray-complexioned face, Philip IV of Spain, so often and so magnificently portrayed by Velasquez. How came the Westminster Abbey cope into the hands

of the rector of Stonyhurst College? Through what vicissitudes has it passed since Henry VII gave the order for its fabrication at Florence? "The whole suit of vestments and coopies of cloth-of-gold tissue wrought with our badges of red roses and portcullises, the which we of late caused to be made at Florence, in Italy, which our King Henry VII in his will bequeathed to God and St. Peter, and to the Abbot and Priory and Convent community of our Monastery of Westminster." [*Testamenta Vestuta ed Nicholas.*] It would be a graceful act to return the vestment to the successor of the Abbots, the Dean of Westminster, who might wear it at the next coronation.

The residenza, or ceremonial throne of Giuliano de' Medici, is a long, broad seat, with a back surmounted by a canopy. It was carved by Baccio d'Angolo in the early part of the sixteenth century. The canopy is supported by pilasters between which are marquetry panels. The cushion is of velvet pile. After the death of Giuliano in 1516, it became the property of Count Nuti, who was attached to the Court of the Medici, and with whose descendants it remained until 1872 when it was sold to Prince Demidoff. The authenticity of this fine work of art is attested in a document signed by the Director of the Pitti Palace, the Countess Nuti and others.

Among the autographic letters is one which must interest Americans particularly. It is from Emerico Vespucci, the celebrated navigator, to his father. It is dated Trivio Mugelli, October 18, 1476, and written in Latin, the writer apologizing for using a language with which he is not very familiar. Of news he says there is none, except that every one wants to move and live near the city. A letter of Benvenuto Cellini to Vincenzo Borghini, Prior of the Innocenti, excuses his non-attendance at Michael Angelo's funeral, upon the plea of ill health. Perugino writes to Isabella d'Este, that he hopes, with God's help, to finish the Duchess's picture shortly. Pietro Aretino, like the rest of us, is sadly in want of money, so he writes to Cosimo de' Medici, to assure him that he, Aretino, has no communication with the exiles; hoping by this means to extract some cash from the great man. Cosimo de' Medici writes to a London friend about some money matters between the writer and the King of England; and Poliziano indites a letter to Lorenzo de' Medici, believing his correspondence to be interesting because he always writes about Lorenzo's relatives!

The Queen has lent some specimens from her fine collection of original drawings. They are by various artists and demonstrate that success always succeeds. Many of these drawings would not be much noticed had not the authors been great in painting. But Michael Angelo stands out like a giant. "The Tale of Phaethon" is a wonderful piece of imaginative drawing, for no models, horse or man, could possibly be placed in such positions for more than a second. Exquisite also is the anatomical study of a man. As to the delicious studies of leaves and flowers by Leonardo, what school-of-art student of freehand who had passed his examination would condescend to do such insignificant things? Nevertheless they are masterpieces.

PENGUIN.

COMMISSION ON OLD MATERIALS.



re-use of old materials in building operations is a very common occurrence, especially in the reconstruction of business premises in towns; but how the re-employment of old materials should affect the architect's commission seems to be a question that admits of different answers, according to the view taken of his duties. Many people, when they rebuild their premises, and use a large quantity of the bricks and timber of the old building, imagine that they ought to be savers both on the building and also on the architect's fees. Generally, after crediting the old material available, and deducting therefrom the cost and labor of pulling down, removing and cleaning, the contractor is able to show an appreciable saving in his tender, and the owner rushes to the conclusion that the architect's commission will be so much the less. But as this commission is supposed to be charged on the total cost of the work, including new materials, the architect is entitled to charge on the total value of the old materials without deduction. It makes no difference to him whether the materials used are new or old; he has to exercise the same skill in arranging and treating them, and therefore is entitled to the same amount of remuneration. The cost and labor of cleaning the bricks, etc., have nothing to do with the architect, as, if deducted from their value on the estimate, his commission would be so much the less than if new materials were used in the building. To deduct the cost of labor in cleaning and converting old materials is equivalent to an appreciable reduction in the materials required to execute the design. It would be unfair to suppose that the cost of converting old material should fall upon the designer, as if he was a gainer by the transaction, or was responsible for, or interested in the process. If the architect could only charge on the net value of old materials, it would be like expecting a painter to pay for the cost of painting-out and preparing an old canvas that may be given him for a new picture. To put an extreme case, we may imagine the labor and expense of cleaning and preparing the old material to equal their value. In such a case, is the architect to lose his commission on the value? If he were, he might in not a few instances have to sacrifice a large proportion of his remuneration. In brickwork, for example, the approximate proportion of materials to labor is about sixty-six per cent, and the labor only thirty-three per cent, or two-thirds material to one-third labor; so that in a building made up chiefly of

brickwork, like a factory or chimney, the architect depends mainly on the value of the materials to compensate him, and hence the rule that the total value of building work is taken as if all new materials were used.

In foundations a large amount of old bricks are used, especially in works of alteration or rebuilding, generally the most troublesome kind of building, and involving a great deal of skill and labor on the part of the architect. But if the cleaning and removal of the old materials were deducted from their value, the architect's remuneration for all the extra trouble required would be quite inadequate at the usual percentage. In many cases of rebuilding quite sixty or seventy per cent may be spent for pulling-down and cleaning the old materials, so that in a large building of several thousands the commission of the architect would be greatly reduced in consequence of this reduction in the value. Yet, without considering these reasons, we hear of persons who are about to build obtaining all their own materials, bricks, timber, fittings, etc., and obtaining tenders for the labor, supposing that by such means the architect's commission will be less, chargeable only on the labor or on the reduced estimate thus obtained. In an ordinary house, putting the labor down at one-third the total cost, the architect on this system would only be paid in the same proportion, a fact which only need be stated to show how preposterous the idea is. The professional "five per cent" has been based on the assumption that a fair proportion of the total value of a building is made up of materials. In a work of skilled masonry or joinery, where the materials bear a much smaller ratio to the amount than brickwork, usually one-third, the commission would be ridiculously low. These are points for the architect to consider when he has to deal with a large quantity of old materials, or when from other causes his work is one of skilled labor. He should make it understood that if the materials are not to be included, his commission must be at a higher rate. — *Building News.*



BEAUX-ARTS SOCIETY OF ARCHITECTS, NEW YORK.

By the courtesy of the Architectural League, there will be held in their rooms, American Fine Arts Society Building, 215 West 57th Street, a free exhibition of architectural drawings made in France, Italy and Greece, by Mr. Albert Randolph Ross; to commence February 8 and continue two weeks.

This remarkable collection is considered by the Society (under whose auspices it is exhibited) to be the best ever shown in this country for purity, style, and selection of subjects, and it is hoped that an appreciation for really good drawings will be shown by a large attendance.

WM. A. BORING, President.

SKETCH-CLUB OF NEW YORK.

THE regular monthly meeting of the Club was held at the club-rooms Saturday evening, February 4, sixty-two members and one guest being present. This was the meeting for the election of officers for the ensuing year. The greater part of the evening was spent in reading reports and voting. The elected officers are: Mr. Edgar Josselyn, President; Oliver J. Cummings, Vice-President; H. C. Pittman, Recording Secretary; H. H. Braun, Corresponding Secretary; Willard Hirsch, Treasurer; Harry L. Parkhurst, Chairman of Current-work Committee; Mr. J. J. Petit (re-elected), Chairman of Entertainment Committee; Mr. G. M. Pollard, Chairman House Committee.

The January competition for a "Cathedral Pulpit" was criticised by Mr. Francis L. Ellingwood, Mr. H. H. Braun receiving first place.

H. C. PITTMAN, Rec. Secretary.

AMERICAN INSTITUTE OF ARCHITECTS.

At the January meeting of the Directors of the American Institute of Architects, a committee consisting of E. H. Kendall, 150 Fifth Avenue, New York, N. Y.; R. W. Gibson, 18 Wall Street, New York, N. Y.; E. A. Kent, White Building, Buffalo, N. Y.; James W. McLaughlin, 46 Johnston Building, Cincinnati, Ohio, and W. L. B. Jenney, 1120 Home Insurance Building, Chicago, Ill., was appointed "to report as to the relation of the Chapters to the Institute and to recommend such changes in the by-laws as they may deem expedient." The committee desires to know as early as possible the views of the practising architects of the country, both members and those who are not members of the Institute, as to the relationship of the Chapters to the Institute, as it is well known that there are many persons desirous of becoming members of the Institute whose residence makes it impracticable to become members of any Chapter of the Institute, and at the same time it is well recognized that persons living where they can become members of Chapters should affiliate themselves with such Chapters as a precedent condition of becoming members of the Institute. The Committee, therefore, solicit communications upon the subject from all persons interested, which communications can be sent to any member of the Committee or to the Secretary of the Institute.

ALFRED STONE, Secretary.

65 Westminster St., Providence, R. I.

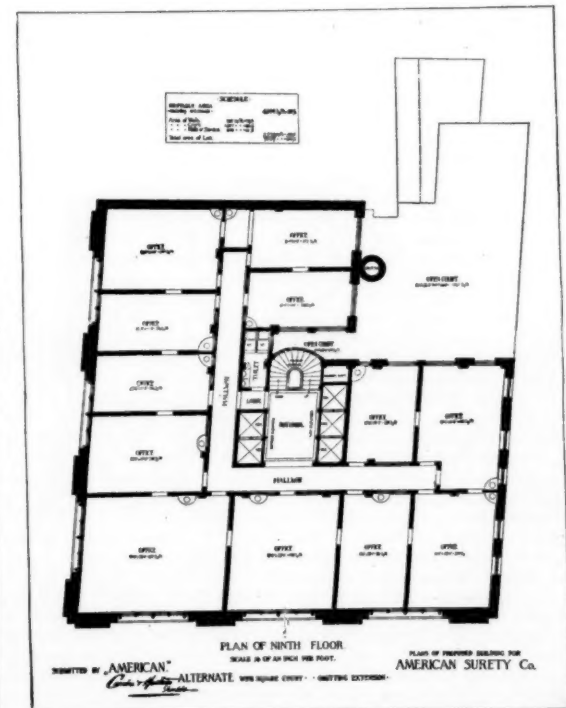
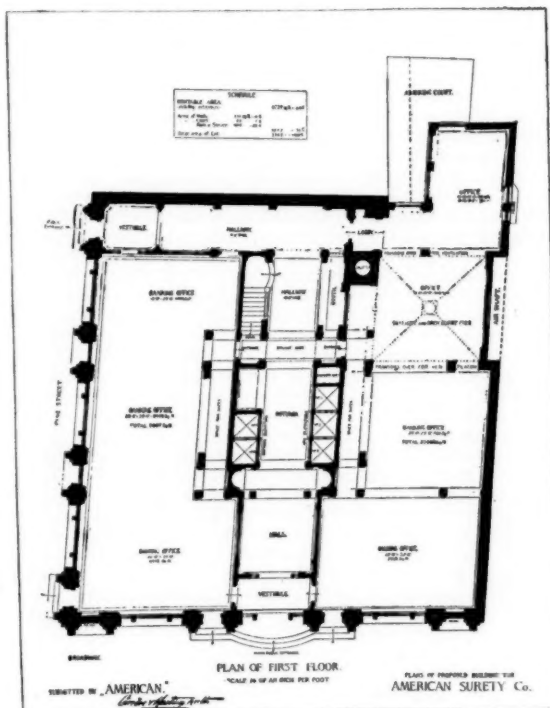


[Contributors of drawings are requested to send also plans and a full and adequate description of the buildings, including a statement of cost.]

INTERIOR OF THE HOWARD MEMORIAL LIBRARY, NEW ORLEANS, LA. MESSRS. SHEPLEY, RUTAN & COOLIDGE, ARCHITECTS, BOSTON, MASS.

[Gelatine Print, issued with the International and Imperial Editions only.]

COMPETITIVE DESIGN FOR THE AMERICAN SURETY BUILDING, NEW YORK, N. Y. MESSRS. CARRÈRE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.



HOUSE FOR MR. —, CHICAGO, ILL. MR. F. R. COMSTOCK,
ARCHITECT, HARTFORD, CONN.

VENTFORTH HALL, LENOX, MASS. MESSRS. ROTCH & TILDEN,
ARCHITECTS, BOSTON, MASS.

COMPETITIVE DESIGN FOR THE SWEDISH E. L. CHURCH, BROOK-
LYN, N. Y. MESSRS. J. G. GLOVER AND H. C. CARREL, ASSO-
CIATED ARCHITECTS, NEW YORK, N. Y.

[Additional Illustrations in the International Edition.]

WASHINGTON STATE BUILDING, WORLD'S COLUMBIAN EXHIBI-
TION, CHICAGO, ILL. MR. WARREN P. SKILLINGS, ARCHITECT,
SEATTLE, WASH.

[Gelatine Print.]

THE GERMAN GOVERNMENT BUILDING, WORLD'S COLUMBIAN
EXHIBITION, CHICAGO, ILL. HERR JOHANNES RADKE, ARCHI-
TECT, BERLIN, PRUSSIA.

[Gelatine Print.]

NEW WING, NORTH INFIRMARY, CORK, IRELAND. MR. ARTHUR
HILL, B. E., M. R. I. A., ARCHITECT.

THE addition to this building which we illustrate in the present number has been erected from funds bequeathed by the late Lady Combermere as a memorial to her father, Dr. Gibbings, who was for many years connected with the institution.

The difficulty attending the arrangement of the building on the extremely limited site at the disposal of the trustees, in such a manner as would not overshadow the old building, and at the same time to maintain perfect lighting and ventilation of the new wards, led to the adoption of rounded ends to all the new portion. The result has been very satisfactory as regards the free access of light and air to every window.

The walls are brick and cement, built hollow, and faced with the South Buckley Company's buff facing-brick and Portland-stone dressings. In addition to the specially-made curved bricks, three-quarter moulded bricks were also specially made for the window-jambes, to avoid cutting. The floors are concrete and iron joists with tongued red-pine boarding in the wards and marble-mosaic floors in the other portions. The roof is constructed in a similar way and covered with asphalt, forming a valuable airing-ground, part of which is under glass for the patients.

INTERIOR OF THE SAME.

PLANS OF THE SAME.



[The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.]

THE NEW YORK CITY-HALL COMPETITION.

St. Louis, Mo., February 8, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—In the third or fourth number from this last, you gave the report regarding the New York competition, stating the number corresponding to those that were favored. I find nothing in the *American Architect's* last two numbers regarding this, with the exception of an advertisement in care of some lawyer, I suppose, in New York, to the effect that all architects interested in the New York competition should refer to him. I also notice in the *Engineering Record*, something to the effect that the New York Commission have dismissed the competition entirely. Of course, such proceedings would be a violation of their contract, which they certainly have entered into with all architects going into competition. As I have heard nothing else, will you be kind enough to advise me at your earliest convenience, what the Commission are doing and have done in this matter and also what position the above party takes, and greatly oblige,

Respectfully yours, MISSISSIPPI.

[THERE is little that can be said as to the status of the New York City-hall competition, in spite of a good deal of foolish and foundationless statement that has appeared in the daily papers. The competition has as yet neither been decided nor abandoned and competitors have a right to complain only of the delay. Certain architects, who refused to enter the competition because they were unwilling to accept the compensation offered in the original programme, are now anxious that the present competition shall be abortive and a new one instituted with terms more to their satisfaction, and a considerable part of the newspaper discussion doubtless is colored by opinions which have been expressed by these malcontents. The

Building Commission have clearly misunderstood the real tenor of the report of their architectural advisers, who have submitted a statement which declares that the competition has been carried out exactly on its stated lines and has resulted exactly as such a competition was expected to result—not in the discovery of a single preëminently suitable design, but in proving that there were half-a-dozen designs of sufficient initial merit to make it probable that one or more of their authors might safely be intrusted with remodelling for execution his original design or preparing an absolutely new design based on more precise instructions. The Mayor and the Building Commission expressly informed their architectural advisers, at the time the programme was being prepared, that they did not wish the competitors to be hampered in their efforts by having to meet a stated total cost, and that unless the anonymity of the designers was made inviolable there was no possibility for the authorities to escape charges of trickery and collusion. Such official and unofficial complaints, then, as contravene these two statements are wholly inexcusable. We believe fully that no one, competitor, expert adviser, official or newspaper reporter, knows the names of the six competitors whose designs have been reported with a qualified favor.—EDS. AMERICAN ARCHITECT.]

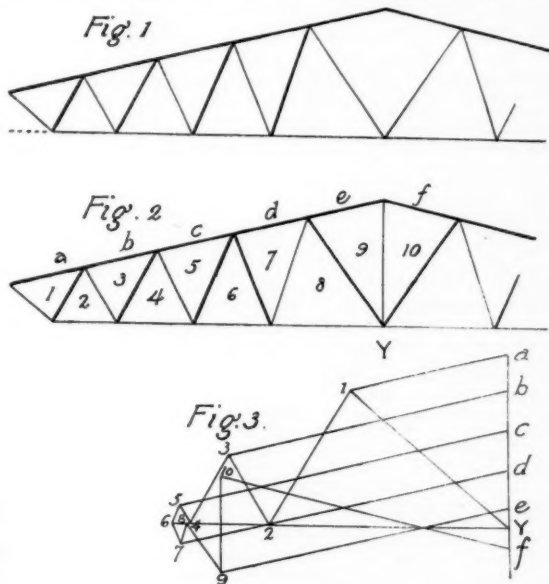
WANTED: AN EXPLANATION.

SAN FRANCISCO, CAL., January 21, 1894.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs,—I have taken it upon myself to study graphic statics with no other teacher than your "Office-help" column and "Trussed Roofs" by Ricker. Upon seeing a form of truss that is new to me employed in a structure, I generally attempt to make a strain-sheet of the same.

Through your kindness, would like to beg for information of some of your readers as to how to ascertain by diagram what it is that lends stability to the truss as shown in Figure 1, which is a form of



truss that I ran against. To me it is not in equilibrium. Should it not be like Figure 2 of which Figure 3 is an attempt at the strain diagram for same?

The upper and lower chords are composed of two pieces of 2" x 8"; the lower chord being continued as per dotted line, the struts are of 2" x 6" and the tie of round iron rods. The span is about 40' 0".

Yours truly, J. G. HULT.



TRADES UNIONISM IN FRANCE.—A report on French trade-unions has just been published in the *Journal Officiel*, but the statistics do not extend back farther than 1884, when there was 175 trade-unions regularly constituted, 101 of which were masters' unions, 68 workmen's unions, one mixed, and five agricultural. Each year since then has seen a steady increase until, on July 1, 1893, the total number amounted to 4,448, of which 1,397 were masters' unions, 1,926 workmen's unions, 173 mixed and 952 agricultural. The increase of membership has been equally marked. Thus from July 1, 1892, to July 1, 1893, membership in trade-unions increased by 176,156. Of these new associations, 27 were of physicians and midwives, who were allowed to benefit by the law of 1884 only by the special provisions of a bill passed in November, 1892. The number of mixed unions has rapidly fallen off. Unfortunately, the report contains no information concerning the course of the unions in relation to strikes, nor is anything said of the trade-unions which have been dissolved in consequence of their neglect to deposit a list of members in accordance with law. Among the satisfactory features of the report may be noted the increase in registry-offices and the establishment of orphanages and museums.—N. Y. Evening Post.

THE GROWTH OF THE POPULATION OF LONDON.—The favorite name of Cobbett for London—"the wen"—is going to be truer than it ever has been, if we can trust some remarkably interesting statistics just issued by the London County Council. One question discussed is whether London is or is not being checked in its rate of growth. On a first glance at the Registrar's figures with regard to London itself, it appeared as though it were, for before 1881-'91 London population was increasing every ten years at a rate varying from 16 to 21 per cent, but in the decade ending with 1891 the rate of increase had only been 10 per cent. "Does this mean," asks the committee, of which Mr. Costelloe is chairman, "that London has reached the turning-point, and that in a few years the increase will become a decrease?" The committee finds that it does not. It appears that the true reason for the apparent diminishing rate of increase is that the building-space in London is gradually being appropriated, and that the people, aided by improved railway and tramway and omnibus accommodation, are betaking themselves more to outside London residences. Even in Greater London this is noticed to a smaller extent. The rate of increase in population, while still very rapid in Greater London, is beginning to show a tendency to become slower, and it is discovered that the Londoners are moving still farther out into the home counties. Then there are speculations as to what the size of London will be fifty years hence, or less, upon the milder suppositions. If we do not add any more to the population than the amount per decade that has been added since 1881, it seems that we should have a population in 1941 of close upon 10,000,000. If we allow for a growth at the rate of the natural increase of births over deaths, there will be nearly 11,000,000 in London in that year. If we reckon that London will grow at the average rate of the last three decades, we shall be over 14,000,000; but, if inner London and outer London go on together growing at the rate they have been growing for the past three tens of years, we are to expect a London population in 1941 of a trifling 17,500,000. If we look at the matter in another way, and ask what population Greater London will contain when it has attained throughout the mean density of well-known areas, we get the following appalling circulation:

If Greater London were peopled only as densely as Hampstead,	
it would contain a population of.....	13,000,000
If it were peopled on an average as densely as Fulham is now,	
the population would be.....	20,000,000
If it were peopled at the rate of St. George's, Hanover Square,	
the total would rise to.....	30,000,000

Whitechapel is now three times as densely peopled as St. George's itself. The moral is obvious.—*The Westminster Budget.*

THE PRAIRIE SOD HOUSE.—"The sod house of the Kansas and Nebraska plains is following the buffalo and antelope into the land of legends," said William F. Arbuckle of Topeka. "A good many of the queer structures are still standing, and in some instances are yet used as human habitations, but most of them are utilized as stables for horses or cattle and are slowly crumbling away to become indistinguishable in their original earth. When I first went West, years ago, my father took up the acres as far as his eyes could reach in what is now eastern Nebraska. There was not a tree in sight of the knoll he had selected as the spot upon which his residence should be erected, and the nearest place lumber could be secured was sixty miles away. He put up a small tent in which to cook and eat—the family slept in the wagons—and, with my brothers and hired man to help, set about making a house. The thick sod was cut from the prairie in slabs about two feet wide by three in length, and on the side of the knoll, where an excavation had been made in its side, these slabs were placed, one on top of the other, until the required height was reached. It was arduous work, and I remember what a lot of excitement there was when my father and my brother Lem started off early one morning to go after the ridge-pole and rafters that were to support the roof. They took only the running-gear of our small wagon and I cried like a good fellow when they started off because I thought they had broken up my pet vehicle. They were gone nearly a week and reached home in the middle of one night after their journey of 120 miles. They had brought a long, round piece of timber, like a slender telegraph pole, with numerous other smaller pieces, and my mother nearly had a fit of delight when they proudly displayed a door and two window sashes, with a bundle of glass for the latter. There was great rejoicing when that ridge-pole was put in place and the rafters run down from it to rest on the sod walls, and then came the laborious task of putting on the sod roof so that it would keep out the rain and snow. At last it was completed and we moved in. The house had four rooms, which was unusual for such structures, and its two windows soon made it known all over that section of the West as the "Shack with the Glass Eyes." There never was a more comfortable building erected than a sod house. They are not all damp, as one would suppose, and are warm as you could desire in winter, while in summer they are the most delightfully cool places imaginable. But they are rapidly disappearing now, and when you see one you are sure to find near it a modern cottage with its windmill just as you do out at our place.—*Washington Post.*

A STRAW BRIDGE IN TEXAS.—A Texas journal describes a straw bridge which has been built across the Red River, seventeen miles from Quanah, Hardeman Co., Texas. The bed of this river is very wide, and is said to consist of a very fine red treacherous sand, making heavy hauling impossible. The bridge is really a causeway, three miles long, about five feet high, and wide enough for two teams, and appears to have been constructed by a settler, who charges a small toll for its use. It is built of alternating layers of long grass and sand, and is rebuilt every season, as the high water washes it away. An attempt has been made to build an iron bridge, but it was washed away almost immediately, and, it is stated, the natives find the straw bridge better as well as cheaper.—*Invention.*

BOSTON'S FIRE-LOSS FOR 1893.—Superintendent Samuel Abbott of the Protective Department states, that the total fire-loss in Boston during 1893 will reach \$4,950,000. The normal annual loss by fire in Boston is \$1,000,000. The city suffered a loss of \$3,000,000 in the great fire on Lincoln Street last March.—*Boston Transcript.*

A CINCINNATI CATHEDRAL.—The erection of a Protestant Episcopal Cathedral in Cincinnati seems about to be realized. At a recent meeting of the various church vestrymen with Bishop Vincent, earnest discussion was had of the long-cherished project, and practical steps taken to secure a suitable site, together with architectural plans for a structure to cost not less than \$2,000,000.—*The Evening Post.*

GERMAN SUPERSTITIONS ABOUT STONES.—An entertaining chapter on minerals, and the popular superstitions connected with them in Germany, is contributed to *Die Natur* by Friedrich Klinkhardt. Children under the age of one may not play with stones, otherwise bread will be scarce. An ill omen may be made innocuous by throwing a stone into the road before taking the next breath. Chalk is credited with many virtues: Cows marked all down the spine with chalk consecrated at Epiphany remain healthy, and always find their way home. Alabaster in water is used for curing sick children in Bohemia. A flint pebble from the brook, if thrown over the roof into the poultry-yard, encourages the hens to lay eggs. The beliefs connected with "thunderbolts," which are sometimes flint instruments, or quartz crystals, or lightning tubes, are exceedingly numerous: in the Palatinate it is believed that thunderbolts, after penetrating seven yards into the ground, rise a yard every year. This reminds one of Mjolnir, Thor's hammer, which returned to his hand.—*N. Y. Times.*

THE WEALTH OF AUSTRALIA.—In the course of an address delivered the other evening before the Royal Colonial Institute, in London, Miss Flora Shaw said: "Wealth is the distinctively, to some people the objectionably, modern characteristic of Australia. Whatever some financial critics may say—and I am trying to-night to avoid the introduction of a single figure—the wealth of the continent is simply prodigious. It is not that she has a Mount Morgan mine in which gold seems at a far distant period to have been thrown up from some underground store almost as freely as the water of the Charleville bore is leaping up to-day. It is not that she has a phenomenal horse shoe of silver at Broken Hill, from which something like one-fiftieth of the annual silver output of the world is produced, or that, if all late reports are true, she has a scarcely less remarkable third marvel in the copper deposit of Mount Lyall, in Tasmania. It is not that throughout the old rocks of the coast range coal and tin and the more homely minerals alternate with abounding gold; that fresh beds of mineral wealth are being opened every day; that diamonds and rubies, topazes and emeralds are scattered through her hills; that even in the sandstone plains of the interior, where no gems were looked for, opals wait to be picked up; or that the warm waters which wash her shores bring pearls and coral in their waves. These are mere incidents in her good fortune. Her true wealth lies in the common earth. As with her political, so with her natural history. The virgin continent has spent herself in no efforts in the past. She has produced neither the varied vegetation nor the immense mammalia of the prehistoric periods of the northern hemisphere; but, isolated by the oceans which surround her, she has remained apart from the general evolution and reserved herself wholly for futurity. The savage races which haunted her western forests had no message of life for her. She has waited for the best that history has produced, and now at last, wedded to cultivation, she seems destined to become the fruitful mother of the wealth of half a world."

SUCCESSFUL TEST OF THE HYDRAULIC TUNNEL AT NIAGARA FALLS.—The first practical test of the great hydraulic tunnel, which has been under construction at Niagara for the last three years, was made at 11 o'clock, January 25. When the gates were raised at the entrance to the feeder, leading from the big hydraulic canal to the wheel-pit of the Niagara Falls Paper Company's mill, the waters of the upper river rushed through their new-found channel to the wheel-house, where they poured down the penstock of the pit, a high iron structure, thirteen feet in diameter, for a distance of 155 feet, then striking in an upward direction three of the largest turbine wheels ever built, and thence passing into the big tunnel, and flowing out under the city to the river below the falls, nearly two miles distant from the point of the fall. This test shows what many thousands have been waiting to see—a practical demonstration of the great scheme for harnessing the terrific power of the Niagara—a scheme which has already cost nearly \$4,000,000. The paper-mill, which is the first to get the benefit of the power, is the largest of its kind in the world. Its contract calls for 6,600 horse-power, one-half of which is being used now, and the cost, including the lease of the land occupied by the mill, is \$8 a horse-power a year for twenty-four hours a day, the cheapest, it is said, ever obtained. The test proved a satisfactory one, and the mill is now in full operation. The hydraulic tunnel, with a capacity of 120,000 horse-power, is a success, and now there remains only the formal opening of the general power-house, where 5,000 horse-power turbines will operate 5,000 horse-power electric generators for the transmission of power in this form. This opening will take place on June 1, and it is intended to give the affair a celebration at which distinguished scientists, engineers and State officials will be present. The test was made in the presence only of the officials of the paper-mill and of the R. D. Wood Company, of Philadelphia, who built and placed the machinery in position, and Prof. Geyelin, the designer of the turbines used. The first water drove one of the three turbines until 1 o'clock, then the second was turned-on and a third at 2 o'clock. The public were not acquainted with the fact until an hour later, owing to the desire of the company to make all possible allowances for newness of machinery, etc. Not a hitch was made, however, and everything ran as smoothly as could be desired.—*N. Y. Tribune.*