

STUDENTS' DEPARTMENT.

"CANADIAN ARCHITECT AND BUILDER"
STUDENTS' COMPETITION.

SEVERAL additional designs have been received in this competition. In a number of instances, however, students have expressed dissatisfaction with the proposed method of deciding the competition, and in the case of some this objection was so strong as to prevent them from taking part. In view of this, it has been thought desirable to abandon the idea of deciding the competition by a vote of the students, in favor of the method heretofore pursued in competitions of this character. The designs submitted will therefore be referred to a committee of three architects to be selected by the Toronto Architectural Guild, who will adjudicate upon them, and whose report thereon, together with the design that shall be given first position, will be published in the May number of this Journal.

In this connection, will the author of the design with the nom de plume "Toledo," kindly forward his name and address to this office, in order that he may be entered on our list of subscribers, and the subscription which he forwarded placed to his credit.

INTERCOMMUNICATION COLUMN.

This column is intended to afford a means of correspondence for students, builders, and all our readers desiring information they cannot otherwise obtain. Questions for which an immediate reply is required should be marked "Urgent." Names and addresses of correspondents must be sent with their communications, but these may be signed with initials or otherwise, or publication.

QUESTIONS.

[14]. Would it be safe to build a chimney of a factory of sandstone? The height would be probably 200 feet. Is the stone strong enough not to crush in the lower courses?—ASPIRANT.

[15]. Could you solve for me this problem in foundation work? The site for the proposed building is half limestone and half clay. The limestone crops out at an angle, roughly, of 45°, and the clay seems to lie on the tolerably smooth side of the limestone. So far as I have been able to test the formation there does not appear to be any ledge on the limestone which would serve to hold the clay; none at any rate for a depth of 20 feet. I fear lest the clay should slide on the limestone with the weight of a building. What kind of a foundation ought I to use?—PREDICAMENT.

[16]. What is the weight of snow in a slushy condition? How much extra weight ought to be allowed for in the construction of a large flat roof in addition to the ordinary allowance for snow, where it might be difficult to get the snow off before it thaws?—FROSTY.

[17]. Is there any rule, or where could I find a rule, for making a sun-dial? I think an answer published in your columns would tend to make the sun-dial more popular.—J. L. T.

[18].—1. Will you kindly let me know if there is such a thing as a durable paint by means of which brick could be given their natural whitish colour, and if so, should the brick be rubbed level before the paint is put on? 2. What paint should be used to blacken the mortar used occasionally in putting up brick buildings.—CHARLES SCHURLER, Mildmay, Ont.

ANSWERS.

[9]. "Budding Architect"—Here is a suggestion: 1. "Ferguson's Hist. of Architecture," Students' Edition; 2. "Notes on Building Construction," S. Kensington, latest edition; 3. "Building Construction," Clarke; 4. Binns' "Orthographic Projection"; 5. Paley's "Mouldings"; 6. Gwill's "Encyclopedia."—OLD BOY.

[10]. J. B. M.—It would hardly be possible to give an answer to your question which would be certain to answer; the only way is to try one or two remedies. Coal tar, applied with a large flat brush, boiling hot, in two or three coats would probably waterproof the stone sufficiently. Boil two or three gallons at a time and set it alight when boiling. Stir continually while blazing. This will reduce the volume, and as it cools it becomes pasty, in which condition it is ready for application, but it must be boiled up for use.

[11]. My suggestion of a "reading club," or "circulating architectural journal club," or whatever it might be called, has not apparently met with a favorable reception. I should have suggested such papers as The Building News, The Builder, and such papers as are not regularly taken by the principals in our offices, but unless there is in next issue a demand for such a "club," I shall drop it. The expense need not be more than a dollar per member.—G.

[12]. A simple and thoroughly effective way of preventing the rushing of snow off a roof is the placing of iron hooks at intervals of 4 feet all over the roof in rows about 2 ft. or 3 ft. apart. These hooks hold up the snow so that it thaws gradually, and when it slips, it does so in sections, which make little noise and fall lightly.—B. X.

[8]. "Architect"—The answer given by "Architectus" to your question on "telling good cement from bad," is not satisfactory, the methods he suggests being too crude and out of date. Use cement of home manufacture, then you can get at the

maker if they are not as satisfactory as represented. "Faiza" on the manufacture and use of Portland cement is a work you should read.

ANS.—[18].—1. Do not rub the surface of brickwork before painting, except with a dry brush to remove dust or loose dirt. Good lead and linseed oil paint will be the most durable for the kind of work mentioned. The best color effect will be obtained by a practical painter mixing the tints to suit the condition of the work. This will vary with different bricks and locations. First coat with pure oil or very little color, followed by two coats in the ordinary way. 2. For mortar color the only safe thing is to use one of the best brands of the manufactured article, which may be obtained from firms whose names will be found in our advertising pages.

USEFUL HINTS.

RESIN is utilized for making the varnish used by Venetian blind manufacturers for painting their blinds. This varnish is mixed with the desired color, mostly green, and when painted gives a hard gloss enamel surface.

Radiation of heat is diffusion of heat by projection of it into right lines into space, from a body having a higher temperature than space surrounding it, or body or bodies enveloping it.

In painting houses situated at the seaside, a good deal of trouble is frequently experienced because of the action of the salt and fog upon paint, especially when it is first applied. A practical painter recommends that no paint shall be applied to work situated at the seaside until the sun is well up, in which case the wood will have had a chance of getting dry. Ochres or earth paints should not be used for priming as they are likely to be attacked by mildew, especially where boiled oil is employed as the vehicle.

Animal and vegetable substances with fine fibres, such as air, cotton, felt, wool, fur, are the slowest or worst conductors of heat, owing chiefly to their interstices being filled with air, which is a still worse conductor. Wood, sawdust, chalk, sand, stone and brick are slow or bad conductors of heat. Brick work, of either common brick or fire brick, is a bad conductor of heat. Non-conducting coverings, for preventing radiation from steam pipes, steam cylinders and steam boilers, are composed of materials which conduct heat slowly.

The painter is often credited with a great deal of the shortcomings of the carpenter, and this fact renders all contracts for painting more or less uncertain. A price may be given in that would yield a profit if the paint were applied to properly finished work, but when it is applied to wood that is knotty and sappy, or full of cracks and holes, it of course has to be made good before the paint can be put on, and this means considerable labour and expense. Such defects are more likely to occur in cheap work than in high-class work, so that in estimating on inferior jobs it is always well to leave a broad margin to cover such items.

The best method of comparing two samples of pigment together for tint and brilliance is as follows:—Procure two glazed porcelain tiles, one black for whites, pale yellows, greens, and pale colours generally; the other white for blacks and dark colours generally. A little of the sample is taken upon the point of a palette knife and placed on the tile, and a similar quantity of the "standard" samples taken and placed close to the sample on the tile; the two heaps are then pressed by means of the knife so as to obtain a flat, smooth surface on the samples, and by holding them up nearly on a level with the eye and looking along the surface of the heaps of colour; by these means any difference in the shade of the two samples can readily be detected.

In a paper on the purification of the air in public buildings and dwellings, read before the Society of Arts by Mr. Wm. Key, an apparatus was described for filtering and washing the air. It consists of a screen formed by stretching some thousands of cords of suitable material from the ceiling to the floor of the air chamber. The cords touch each other and are interlaced horizontally with copper wires, which are drawn tight to give the screen a flat surface, so that it has the appearance of coarse cloth. Air passing through is broken up into minute streams, and is washed free from impurities by water trickling down the cords. Experiments showed that not a particle of the densest fog passed through the screen, the air being filtered "bright and clear, perfectly sweet, and free from odor." Dust particles were not so perfectly removed, but it was noticed that after removal of fog, the air was so much brighter and clearer than usual as to suggest that the artificial production of fog might ensure the complete removal of very minute dust particles.—Scientific American.

The effect of different beds in making compression tests of stone has been investigated by Prof. Malverd A. Howe, of the Rose Polytechnic Institute. Cast iron, soft pine, sole leather, sheet lead, and tar board were tried, and the results indicate that to obtain the best idea of the comparative strength of stones, the specimens should be cut with perfectly parallel plane ends and tested between parallel iron or steel plates. As this calls for considerable labor and expense, other materials may be used, but the results were not accurate. Sheet lead seems to distribute the pressure well, but lowers the strength, as registered, by an undetermined amount, depending on the structure of the specimen. Pine splits so easily as to be undesirable. Tar board was found to distribute the pressure very well, but raises the registered strength of the specimen; in spite of this defect Professor Howe believes it to be the most reliable bed for commercial tests of the five materials examined. This conclusion is based upon but 80 experiments, but is considered warranted by the uniformity of results and conditions.

CHARACTERISTICS OF VARIOUS WOODS.—It has long been known that certain woods possessed capabilities fitting them for particular classes of work; but a concise table of collected data on this point will be found useful. The woods noted for elasticity are: Ash, hickory, hazel, lancewood, chestnut (small), yew, snakewood. Elasticity and toughness: Oak, beech, elm, lignum vitae, walnut, hornbeam. Even grain (for carving or engraving): Pear, pine, box, limetree. Durability (in dry works): Cedar, oak, poplar, yellow pine, chestnut. Furniture: Beech, birch, cedar, cherry, pine, whitewood. Best Furniture: Amboyna, black ebony, mahogany, cherry, maple, walnut, oak, rosewood, satinwood, sandalwood, chestnut, cedar, tulipwood, zebrawood, ebony. Building (ship-building): Cedar, pine (deal), fir, larch, elm, oak, locust, teak. Wet construction (as piles, foundations, flumes, etc.): Elm, alder, beech, oak, plane tree, white cedar. House building: Pine, oak, whitewood, chestnut, ash, spruce, sycamore. Machinery and millwork (frames): Ash, beech, birch, pine, elm, oak. Rollers, etc.: Box, lignum vitae, mahogany. Teeth of wheels: Crab-tree, hornbeam, locust. Foundry patterns: Alder, pine, mahogany.—Illustrated Carpenter and Builder.

The death is announced of Mr. Thomas Cuthbertson, the well-known architect, of Woodstock, Ont., which occurred about a fortnight ago.