there was a less proportion of finely broken stone, and hence it will be seen that more gravel had to be used. The parts here taken were: cement, 1; sand, 2; gravel, 3½, and broken stone, 7.

REMOVAL OF MOULDS.—The moulds for the smaller walls were not removed until after five or six days, and those of the higher, and, consequently, heavier walls, were kept on for several weeks.

After the removal of these moulds the walls present a very fair appearance, although there were occasional small projections where the plank had drawn apart and mortar had worked in; but these were easily removed with the edge of the trowel. The outlines of the plank were left visible, and gave one the impression of masonry courses. Where there were pine knots in the plank an impression of these knots was left on the wall, and these spots were found not to have hardened like the rest of the surface. However, a wash of water and cement, with which the faces of nearly all the walls were treated, remedied this.

ADVANTAGES.—About 11,000 cubic yards of concrete works were built during the season, and in the same classes of work the cost was not over two-thirds that of masonry. Its advantages are cheapness, expediency, the utilization of the ordinary laborer instead of the skilled mason and stone-cutter; and, besides these, the stone is more easily found. The use of this class of stone has a tendency to beautify the surrounding country, as the farmer is paid to remove those objectionable stone-piles one so often sees dotted over his farm.

## CONTRACTS.*

By R. J. EDWARDS.

NOT being a lawyer, I naturally feel a certain diffidence in attempting a paper on a subject involved in legal complexities and obscured in what, to the lay mind, appear to be many contradictory decisions. Perhaps the first solid ground one reaches is that it will not do to assume a thing is certain because it is stated in so many words in a text book on the law relating to building contracts. One must read on and turn back, consult all possible and impossible decisions relating to the matter and go over it again. At this stage one may take encouragement from a remark made by the late Sir John Thompson, and coming from a great lawyer it is of especial value in this connection. He said "no one was so likely to be mistaken as the man who was cock sure." Some one may ask, "why not give it up and insist on having all contracts prepared by lawyers." Well, I have seen it stated in the Building News that that was the practice in a certain city in Scotland, while in an adjacent city it was the rule with the architects to do it themselves, and it was said that in the former place there were floods of litigation in connection with building contracts, while in the latter place the stream was an exceedingly small one and was in danger of drying up entirely. Perhaps, long ere this, enough decisions have been recorded in the flood city to clear up all possible doubts and the inundations have become a thing of the past, and the wisdom of the lawyers has been demonstrated in our generation if not in their own. The best book on contracts I know of, is entitled "A Treatise on the Law of Building and Buildings," especially referring to Building contracts, &c. It is by Mr. A. P. Lloyd, of the Baltimore bar. The frequent references to English law and cases, together, of course, with American, make the work more valuable to us here than any purely English work, as decisions in our courts have been more or less influenced by the findings of United States courts. If there is a Canadian work of the kind I do not know of it. I may mention that I shall frequently quote from Mr. Lloyd's treatise. In his preface he says "while the plan of consulting a lawyer before entering into a contract is always advisable, it is a fact that attorneys sometimes omit, or wrongly state, important provisions. Many instances could be cited where legal lights have unintentionally transformed proper contracts into faulty ones, leading to legal complications, etc." This he ascribes in part to lack of proper attention on the part of text-writers to the subject of building contracts.

This, I think, will support the contention that the architect is really the person who ought to prepare the contracts, as he knows thoroughly what is intended to be accomplished. With us the object of a contract is to make it possible to insist that the plans and specifications are faithfully carried out in their entirety, with the least risk, or if possible, none at all, of litigation should it become necessary to enforce the correction of defective work or to employ other builders to complete the contract if neglected or abandoned by the original contractor. With this view our friends of the legal profession, I have no doubt will agree. To attain this object something more is necessary than the mere insertion of a number of clauses in the contract giving the architect unheard of and abitrary powers, and imposing penalties on the contractor. It has been well said that "nothing is settled until it is settled rightly," and if a contract is to stand if attacked in the courts it must be drawn up with reference to the accepted principles of law and in the light of experience gained by the study of decisions.

The plans and specifications shew and state in detail what is to be done, and no form of contract, however carefully drawn, can make up for defects or omissions therein. As the contract, therefore, is of little or no account without the specifications, there are the best of reasons for combining the two in one document. We all know that a slight difference in wording between the specifications on the one hand, written by the architect, and the contract on the other hand, prepared, I suppose, by the then City Solicitor, led to long and costly litigation as to the proper form of the notice dismissing the contractor for the new City Hall and Court House. If, however, the architect is to undertake the preparation of the contracts, it is not saying too much to assert that the client has as much right to demand knowledge and skill in the work as in the making of the plans and specifications.

Assuming that the plans and specifications are comprehensive and complete, what is necessary to be added to or incorporated in them to make the contract complete? The specifications will have already described the kinds and qualities of the materials. The contractor undertakes to carry these out, and it remains to provide against possible shortcomings or neglect on his part, and for payments on the part of the owner.

There are complications which experience has shewn are sure to crop up, such as settlements for extras and omissions and so forth. The ever-changing lien act is sometimes a cause of trouble; I do not feel competent to say anything about its provisions, but I may venture the assertion that if one keeps back plenty of money it will not cause inconvenience. There should be a clause in every contract providing that no extras shall be allowed or paid for unless the same have been authorized by an order in writing, signed by the owner, and stating the amount to be paid therefor. When this is done nothing but the written order will support the claim. Another clause should be inserted providing that where such an order is given, but the parties fail to agree upon the sum to be paid for the extra work contemplated, the work shall nevertheless be done forthwith, and the valuation of the same left to the architect. In practice this would rarely be found necessary. Where the extras are to be covered in each case by a written order the architect should be careful not to sanction any extra work not so provided for, because the contractor would perhaps fail to recover for such work even if assisted by the architect's certificate, for it has been held that where the contract provided that no extras should be incurred without a written order of the owner's engineer, the extra work done during progress, particulars of which were stated upon the certificates issued from time to time by the architect, was not authorized, and could not be recovered for, as these certificates were not counted as written orders.

A clause in a building contract providing for arbitration is considered, by Mr. Lloyd, to be objectionable, for the reason that the architect is the natural and proper arbitrator and in every way competent to decide. This supports the contention that every contract ought to contain an arbitration clause making the architect sole arbitrator in cases of disputes or doubt and binding both parties to the contract to accept his decisions without appeal. Such a clause will hold good, but it may be said it should be acted on promptly. His decision, in the absence of fraud, will be conclusive; but in a California case, where the contract stipulated that all disputes should be settled by the architect, the parties refusing to submit to his decision and he did not act in the matter, it was held that his testimony was not conclusive and that it was competent for the plaintiff to show by other persons the extent of the deficiencies. An arbitration clause will not confer on the architect any power to change the terms of the specifications without special authority, nor will his power as arbitrator permit him to give a certificate when there has been a substantial deviation from the owner's plans. An architect, however, occupying the position of an arbitrator is not liable to an action for refusing to reconsider his certificate or give the grounds of his opinion, no fraud or collusion being alleged, nor is any person called upon to act as arbitrator liable to an action for alleged want of care or skill or negligence. It will thus be seen that an architect who is arbitrator occupies a good position in regard to both client and contractor to check any desire on the part of either to get up a law suit owing to stubbornness or bad temper. If he is capable as an architect he will be quite capable as an arbitrator, and as he will be fully acquainted with every phase of the dispute, he will be far more likely to decide justly—especially as he can be coerced by neither party—than a court where at least half the testimony must be considered untrustworthy before a decision can be arrived at.

The architect's position is much strengthened as an arbitrator by the insertion of a clause making his certificate a condition precedent to the payment of money. In such a case the contractor cannot sue the owner without complying with this condition unless the same can be proved to have been fraudulently or or capriciously refused. The decision of a party passing upon work may of course always be impeached for fraud or mistake.

There should be clauses providing for the dismissal of the contractor for neglect or abandonment of the work and there might with advantage be a clause conferring power on the architect to correct minor defects, where there is neglect or refusal, and charge the cost to the contract, without having to go the length of dismissing the contractor. Such action might be limited to a sum to be agreed upon not to be exceeded in any single instance.

To enforce the completion of the work within a limited time it is usual to insert a clause naming a certain sum to be allowed or paid to the owner for each day's or week's delay in finishing the work beyond the date agreed upon. Sometimes this sum is

* Paper read before the Toronto Chapter of Architects.