

contractor will show a gain or a loss in assets, and they are likely to withdraw credit at a critical time. In addition to this, if a contractor is bidding on all the work in his line which comes up in a certain territory, he is not likely to receive more than 1 out of 15 jobs bid upon, and the cost of estimating becomes a very large part of his overhead expense, as it is hardly possible to estimate, for example, a \$300,000 job at a cost of less than \$500. The only estimate by any bidder that does anyone any good is that of the successful bidder; the balance of the money spent by other contractors on estimating is an economic waste. You can be very sure that the "lump sum" contractor does not forget this when he estimates his cost of a job (or if he fails to include it, he does not know his own cost), and the owner pays in the end; for, like railroads, contractors are not Santa Clauses, and like other men, they have a feeling that no one is entitled to something for nothing.

From the viewpoint of the consulting engineer or architect, there are some real objections to "lump sum" contracting, for in the first place he increases his cost of supervision, which could be avoided by doing the work on a "cost plus" basis, and this is an economic waste. Furthermore, he is forced to look upon suggestions made by the contractor with a certain amount of suspicion, and the natural thought is, what advantage would the contractor making the suggestion obtain? In this way he loses a great deal of valuable assistance, because, even though he had confidence in the contractor, the owner, his client, might lose confidence in his expert advice if he were taking suggestions or receiving advice from one whose contractual relations were directly opposed to the interests of the owner. Again, contractors have been known to have some secret understanding among themselves, for this is sometimes done in spite of legislation against such practice. The modern first-class constructing and engineering organizations are the greatest enemies to "pooling," and the greatest friends to "cost plus" contracting.

Another natural objection of the architect or engineer is that he is not allowed to select an organization which to his mind, is the most efficient and can lend him most assistance, having some expert departments which he cannot afford to maintain. He must decide who the contractor shall be according to cold figures, knowing frequently in his own heart that it is not the best for the owner to accept the lowest bid, but fearing suspicion of the owner that he has ulterior motives if he recommends so highly some particular organization. In addition to this, in "lump sum" contracting there can be very little reciprocity as between engineer or architect and contractor. There is always a certain amount of give and take in any well-conducted contract, but there exists no opportunity for the contractor to bring to the engineer or architect, a commission for professional services by reason of his influence with some particular client, or for the reverse, the architect or engineer to turn over without competition a job for which a certain construction organization is particularly well equipped.

From the owner's viewpoint there are many objections to "lump sum" contracting, some of which have already been covered. In the first place, the contractor and the owner are not working along parallel lines. Their interests are not the same, and this cannot give the best results, though the contractor be ever so conscientious. Most all the objections already mentioned, of his engineer or his architect, would apply so far as the owner is concerned, because of conflicting interests, but if such a con-

tract were entered into as to allow him to select a highly developed and flexible construction organization, and encourage the most effective use of such an organization, all parties would be working toward a common end. Other objections of the owner are that if the architect or engineer makes any mistakes, thereby causing extras or, for any other reason, changes should be made, it is not to the interests of the contractor to call attention to these in advance of signing the contract, but rather to await such a time as the owner would be obliged to pay him almost his own price. Of course, any small changes can be covered by a clause in the specifications, but it is impossible to cover any very large change in original plans. The owner dares not pay the contractor more than is due, according to his contract, even though he may know that he cannot get efficient service without the contractor having ample funds, for he might in this way vitiate the contractor's bond. In fact, the whole proceeding must be bound around with a large amount of red tape.

How much better, how much simpler, and how infinitely more to be desired, is a form of contract where the contractor, owner and expert are working in absolute harmony? Under such a contract, harmony exists because their interests are the same, and they practically form a partnership for a time. The "cost plus" contractor receives the wages of trust, and it goes without saying that there must be absolute integrity and efficiency in the organization before it is wise to deal with a contractor on any basis, but, being first satisfied with the contractor's organization and character, the advantages of the "cost plus" method are:

First, the rate of profit being fixed in advance the owner and contractor are in position to work together for the very best results for the money to be spent. Their interests do not conflict.

Second, desirable changes that arise during construction (and some always arise) can be made in exact equity to the owner.

Third, it should give an owner a better property—the best he and his engineer or architect and contractor can produce for the money spent, at a lower profit than he would usually pay on a flat sum basis—anyway not exceeding cost, plus a reasonable pre-agreed profit, which is as cheap as he is entitled to it; and,

Fourth, the work can be started immediately without waiting for completion of plans in all their details.

In a "cost plus" contract, the owner also receives the savings made in purchases, which are effected by studying conditions as requirements arise for materials, and here is opportunity for considerable saving, sometimes equalling in amount the entire fee of the contractor.

A reliable estimate of the eventual construction cost made by a well-organized and experienced contracting concern is a better guide for the owner as a rule than the bidder's figures on a "lump sum" contract letting. One of the most satisfactory methods of limiting the cost is to let all parties know in advance this limit and work in unison not to exceed it, but to get the most for the money spent, while to try to limit the cost by requiring a guaranteed maximum is only getting back to the red tape of the "lump sum" contract without gaining anything.

In conclusion, a "cost plus" contract is a bankable piece of paper.

A new method of clearing waterways of vegetable matter consists of a set of mowing machines attached to the stern of a launch. It is the invention of a Frenchman.