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THE ENGINEER'S FUNCTION IN MUNICIPAL DEVELOPMENT.*

By Morris Llewellyn Cooke

Director, Department of Public Works, Philadelphia, Pa.

THE rôle which the engineer is to play in the development of our municipalities will depend primarily upon the attitude taken by the profession as a whole toward what appears to be a wonderful present opportunity, and also upon the ability with which the work of the engineer is brought to the attention of the public. There is no real reason why municipal engineering should not be made to comprise most municipal undertakings.

The test by which the rôle of the engineer is to be determined will be the development in our profession of a genuine spirit of public service. The community is apparently ready to accord the engineer a leading, perhaps a controlling, part, if the engineer will consider that in every decision and act there shall be the clearest possible recognition of the public interest.

Engineering has now reached the stage of development where it has become a profession in the highest sense of the word. The engineer being a scientist, his responsibility should be for the development of facts, regardless of whose advantage they may serve. I have in mind that the service of an engineer should be as the service of a judge and as opposed to the service of a lawyer who confessedly seeks out and represents the interests of his client, and often "makes the worse appear the better cause." This is justified by the fact that lawyers are not scientists, and by the assumption that there shall always be opposing counsel.

In the medical profession during the last generation, largely owing to the enlightened leadership of the American Medical Association, there has been inaugurated a great forward movement with the slogan of "preventive medicine." The medical profession in a way seemed to launch a campaign to wipe out its opportunity for a livelihood. There were, and I suppose still are, doctors who held that in advocating "preventive medicine" the profession was standing in its own light. The profession, however, is held in higher esteem than ever before. Under the new conditions there is a broader field for the activity of practitioners, both medical and surgical, than had ever before been available.

On the contrary, in inviting the attention of our profession to the municipal field, we are apparently opening the door of opportunity to tens of millions of dollars' worth of work which is not now either considered engineering nor carried on by engineers. The municipal field is almost virgin soil so far as engineering is concerned. As recently as ten years ago the problem of snow removal, for example, was so absolutely in the hands of thumb rule, and in many instances even of inexperienced men, that it is probably true that in no city in this country was it being attacked either by engineering methods or by engineers. Yet it will not be denied that on work of this kind, in which one city spent nearly \$3,000,000 in six weeks last year, there is in reality an engineering problem of considerable magnitude.

Many municipal engineers in this country are beginning to adopt the European system of employing nonresidents for certain highly specialized positions. Whenever this is practised it excites criticism and abuse. As yet no technical organization, so far as I know, has recognized the opening thus made for technical merit and given moral support to the movement.

Especially in engineering work, almost the entire absence of what may be called a financial programme is the great handicap. Private institutions can go along for years on a straight operating basis and without the necessity for undertaking any extensive construction work. But a growing city-and all our cities are growing cities -must necessarily have to spend a considerable part of its income on construction. This can be done with intelligence only by taking a long look ahead. For instance, at the present time in Philadelphia we are facing expenditures of from \$20,000,000 to \$25,000,000 on a sewage disposal installation; perhaps \$40,000,000 for rapid transit; with extensive additions to our water supply system, not to mention other millions which could profitably be spent on sewers, bridges, grade crossing removals and a much needed programme of modern highway construction. There is probably no city in the country that is even attacking this obvious business problem in an intelligent or energetic way. Reform will not be brought about until the community, and especially the business part of the community, is educated as to its necessity.

I am not one of those who feel that all our shortcomings are "the fault of the people." I would rather assume my share of the responsibility for conditions as they are and then join with my professional associates and the community at large in bettering them. If we engineers are to have any prominent part in this, there are fundamental changes which we shall have to make in our own equipment for the work. In the first place, we have to get rid of the now old-fashioned idea that advertising is a crime. I admit that as a part of my work as a public official I put in a great deal of thought on what may be quite properly called advertising. By that I mean that I pay less attention in my reports to dignity of form and diction than to making them sufficiently interesting to be read. It is only as we engineers who are public officials learn to make the public, sometimes against its will, understand our work, that we are to get that degree of popular support for it which will make it possible for it to be done in an efficient manner.

In my opinion it is going to become more and more a necessity, not only in public, but in private work, for engineers to be able to popularize what they are doing. It is true to-day that a man who wants to do really good and efficient work can do so only after an aroused public opinion. You cannot drive people in a democracy. So I admit that in offering employment to an engineer, other things being equal, I want what might be called a good advertiser. You can secure appropriations for work more easily when it is well advertised. The Panama Canal is a good example of this principle. Again, advertising is the best possible check against ill-advised expenditures. If the public knows how a street is supposed to be constructed or cleaned, you do not require as many paid inspectors on the job.

The development of some varieties of municipal engineering is absolutely dependent upon the development of public opinion and must proceed with it. The matter of street cleaning is largely a question of an improved public taste in the matter of street paving. Unless streets are well paved they cannot be well cleaned, except at a prohibitive cost. To jump from one degree of cleanliness

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