

nothing, or who obtains work by offering to do it at a reduced commission. In the abstract one must condemn such practices utterly, but such is the unfortunate condition of the profession, owing, however, entirely to lack of organization, that the municipal engineer may be forced to do work quite outside his ordinary duties without charge, in order to keep his position, and the consultant may be forced to work for nothing in the hope of being able to make a living some day. This is entirely wrong, but it has been done. There is only one remedy: we, as engineers, should combine and organize for registration, so that the incompetent men may be excluded from the ranks of those who act in chief positions, and when this has been done we shall be able to refuse to work except to a proper scale of charges; and, moreover, we ought to be prevented from doing so. Means must be devised whereby it is made impossible for local authorities to obtain the services of their salaried officials or of consultants except by paying proper salaries or proper fees. In this matter the assistance of the Local Government Board is required, and it is not beyond hope that such assistance would be given if once the profession were properly organized. It is perfectly clear that the board have the greatest dislike to the employment of unsuitable persons by local authorities, and that even at the present time, as far as their powers permit them, they do very good work in refusing to sanction loans for unsuitable schemes prepared by incompetent persons.

It is urged at times that the municipal engineer is unfairly taking up the work of the consultant. This, in the author's opinion, is quite incorrect, for it is obviously the bounden duty of a municipal engineer to give his best services to his employers, and so long as he can do the work, and his remuneration is adequate, the consulting engineer has no grounds for complaint. Where a consultant is called in to advise a local authority, his work should be done in such a way as to assist and strengthen the position of the municipal engineer, and similarly the municipal engineer should work with the consultant so as to ensure the success of his work in every possible way, both sides avoiding doing anything likely to bring the profession into disrepute. In the author's experience these relations are generally quite satisfactory, but it would be of considerable interest to learn the experience of others upon this point.

A consulting engineer is sometimes called in by an authority whose surveyor is a man of knowledge and experience, but whose services are entirely undervalued and underpaid by his council, and whose position is the reverse of pleasant. It is possible in such a case for the consultant to insist upon proper respect being paid to such a man, and he should make it his business to do so and to help him to advancement in every way possible, as the council are likely to attach importance to the action of the consultant and to the degree of respect with which he treats the surveyor.

It may be asked whether it is possible, after all, to make an exact distinction between the man who is an engineer and the man who is not? In the author's opinion there is no difficulty whatever in deciding whether a man is a qualified municipal engineer. It is not at the present time a question of examinations passed, of pupilage, or of membership of societies and institutions. It is simply and solely a matter of training and experience, and unless a man has been occupied for an extended period on municipal engineering work he cannot by any possibility be rightly called a municipal engineer. A civil engineer is

not necessarily a municipal engineer any more than a doctor is necessarily a medical officer. Similarly with regard to consultants the consulting engineer is a specialist, and this implies that he has made a special and extended study of some particular branch of engineering, such as waterworks, sewerage, or electrical work. He is an expert in some particular work, and it is obvious that he is sailing under false colors if he calls himself an expert unless his knowledge and experience of the particular work he undertakes are extensive. It is very desirable that engineers in private practice who undertake to do work upon which public money is spent should be carefully registered, not simply as engineers, for that term is too vague, but as water engineers, gas engineers, sewerage engineers, tramway engineers, etc., as the case may be. It is, after all, a simple matter for a man who poses, say, as a gas engineer, to show that his experience is such as to qualify him to give advice on that subject; if he cannot he is not fit to advise as to the spending of public money on gasworks. Municipal engineers can help their consulting brethren on this point greatly by urging their authorities to see that their consultants on any particular work are really specialists for that work, and not for something else. They can also assist very materially by joining energetically as a body in any scheme for combination which may be forthcoming for the better organization of the profession.

**Points for Discussion.**—(1) The proper qualifications of the municipal engineer.

(2) The proper qualifications of the consulting engineer.

(3) How to prevent local authorities from employing:

(a) Incompetent persons in municipal engineers' positions:

(b) Incompetent persons as consulting engineers.

(4) The inclusion or exclusion on municipal work of persons whose training and experience is insufficient to qualify them as engineers. Should these persons be considered as juniors qualifying for the position of engineer, or how should they be regarded?

(5) The position of the municipal engineer who is doing consulting work without receiving proper payment.

(6) The position of the consulting engineer who works without receiving proper payment.

(7) The ways in which the consulting engineer and the municipal engineer may help each other.

(8) The better remuneration of municipal engineers, and the combination of both classes of engineers for the improvement of their profession.

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The area of the Forest Reserves in the Union of South Africa in December, 1911, was 1,799,550 acres. Besides this, there were also 42,587 acres reserved for growing railway ties, on which railway funds alone were expended, making a total reserved area of 1,842,137 acres. Forest surveys are being made for the demarcation of new reserves, and existing reserves are being protected from fire by burning or cutting fire-belts around the reserves and by planting up their perimeters with trees of the less inflammable species. As a result of these precautions there were burned during the season of 1911 only seven hundred acres, or 0.04 per cent. of the total area.

The fourth International Road Congress will be held at Munich in 1916, as a result of an invitation from the Imperial German Government, seconded by a representative of the Bavarian Government.