CORRESPONDENCE.

[This department is a meeting-place for ideas. If you have any suggestions as to new methods or successful methods, let us hear from you. You may not be accustomed to write for publication, but do not hesitate. It is ideas we want. Your suggestion will help another. Ed.]

PRODUCER GAS IN ACTUAL PRACTICE.

Sir,—Referring to the Hydro-Electric Commissions report on producer gas, the writer does not presume to discuss the general conclusion that this power will probably occupy an intermediary position between steam and electric powers. But as to its individual merits and demerits it is possible too decisive conclusions might be drawn from the Commission's report.

If data has been acquired chiefly from inspections of producer gas practice in Canada, such data might perhaps not be sufficient. To make a complete examination of the matter, it would seem necessary for competent men to visit England and Europe and inspect the different types and systems in operation there, where experience has been much more extensive and the success of the power is reported as marked. The subject being comparatively new, very few works of reference have been published.

It is probable that of the plants examined the majority were of the suction type. Has sufficient examination been made in general plants operating under pressure, and of "ammonia recovery" plants wherein a by-product is obtained, the sale of which reduces fuel cost to a minimum? Have all these been taken into consideration in arriving at estimates of power costs and reliability?

It may be admitted that producer gas had a number of setbacks in Canada. In some cases the matter has been treated as a machinery agent's proposition rather than an engineering problem. Plants have been put in which were unsuitable or flimsy, both in respect to type and installation. As might be expected, results have been unsatisfactory. Another important source of trouble has been the ignorance of erecters and attendants. Leaving out the question of risk, which appears greater with steam than gas, it may be stated that for a person unfamiliar with gas practice to attempt to operate a plant will produce results just as inefficient as for an unskilled person to take charge of a steam plant. The commission, however, emphasizes the importance of avoiding these errors.

As to reliability—given the customary essentials for the successful operation of either steam, gas or electricity, i.e., correct types of plants, substantially constructed and properly installed, and competent attendance, the reliability of the producer gas power is certainly sufficient to admit of comparison at least with that of steam or electricity.

Granted that steam is the most reliable of these, can electricity generated from water power be considered entirely reliable without auxiliaries or reserves? Failure undoubtedly occurs, from ice, frazil, low water, etc.

In a plant with which the writer has had recent experience, difficulties undoubtedly have arisen, but in reviewing the same they can be attributed almost entirely to lack of experience and knowledge of proper practice. In proportion as these latter have been gained, the plant has proved itself quite satisfactory as to ease of operation and reliability.

Aside from mechanical defects or accidents common to any machinery, practically all troubles arising in producer gas operation come under three heads, and failure thereunder rarely occurs without giving ample warning for an experienced man to avoid it. With proper supervision and inexpensive duplication of some few parts, the question of reliability may be reduced to an inconsiderable factor for all ordinary purposes.

Respecting loads, sudden and wide variations affect the gas engine, the former condition being more important than the latter. This is minimized where the engines have an ample margin of power and where the pressure system of generating gas is used. With a fairly uniform load, the steadiness of speed is one of the gas engine's strong points. Regarding the cost of power under load variation, as to the fuel cost, at least, the engine uses only so much gas as the load calls for, and the consumption of fuel is automatically regulated accordingly, within limits.

The opinion of the writer, formed from actual experience, and respectfully submitted, is that the merits of this prime mover are such as to deserve the very careful consideration of all power-users according to their conditions.

Almonte, Ont., April 1908. H. W. Lundy.

THE QUEBEC BRIDGE.

Typographical errors, in Mr. Walter P. Chapman's article on the Quebec Bridge in our issue of April 17th, detracted somewhat from the value of the article.

In the sketch showing cross-section of the large members of the Quebec Bridge four not five-inch members should have been shown. The names of the designer, consulting engineer, and assistant engineer, should read Mr. Szlapka, Mr. Cooper, and Mr. McClure.

The date of the article should have been April 3rd, 1908.

THE QUEBEC BRIDGE.

Sir,—Our attention has been drawn to a letter in the Canadian Engineer by Mr. Chapman which refers to the design of the Quebec Bridge, and regret that Mr. Chapman did not give us more of his time and more of the valuable material and data which he undoubtedly possesses. This interesting material, etc., should be very acceptable to engineers familiar with similar large undertakings. We are more than pleased to notice that his statements, made in his too brief letter, are sustained and supported by the best authorities in the world, who have successfully met and overcome greater difficulties, not only in bridge designing, but in bridge erection—two separate and distinct problems.

All engineers, familiar with the erection of large bridges, will at once recognize the value of Mr. Chapman's design, especially the fact that he places two piers beneath the tower of his proposed cantilever instead of one as in the Slapzka design, and we are astonished that any engineer or body of engineers of eminence should for a moment consider it advisable to have designed a bridge of this magnitude and rest it on one pier. The weakness of construction as displayed in this last mentioned plan is evidenced, even to the casual observer. This astonishment is increased by the fact that a precedent had already been established by the greatest steel bridge engineer the world has ever known, and the work of this eminent British engineer will remain a lasting monument to his ability, integrity, and foresight.

Mr Chapman says: "The tower could vary in length from 175 to 200 feet **to suit conditions at end of bridge."** The writer would respectfully suggest that the length of the tower is a quantity which can and must be determined mathematically. Therefore, the length of the tower is a calculable quantity. The same rule holds good as to its height. It also applies to the length of the short arms, for the length of the long arm is arbitrary, and all other stresses and dimensions will be governed and determined by its deadload, rolling load, and associated factors.

Mr. Chapman further states: "To carry out this plan the bridge spans of 210 feet must be eliminated. These