the medical profession take a more active part in politics, but engineers seem to be aloof from the world of politics, by which I mean statecraft and not partisanship. We have no representatives at Ottawa, and very few, if any, in the provincial parliaments. What wonder, then, that engineers are not reckoned upon as a power that ought to be strong and active, but whose strength is lost by the absence of co-ordinated cohesion.

What is it that engineers could do in the sphere of politics? Should we not have the departments which control railways, canals, harbors, water-powers, municipal governments, city planning, etc., under a political head who is an engineer? It is irrational to expect great spending and administrative departments to be intelligently represented by men who probably had previously never been within the precincts of such offices, or who had never given the problems any consideration. It is difficult to see how great schemes for the advancement of technical development of the country can be adequately handled by men who have neither the training nor the trend of mind to measure the advantages and disadvantages. Yet this is what occurs. Why are engineers silent observers and not the actors in the national theatre of our land? It would seem as if we were obsessed by the traditions set by our forefathers, which have become idols and require some iconoclast who has sufficient nerve and confidence to demolish them.

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Toronto, July 9th, 1917.

PITTING OF WATER TURBINES.

In a paper read last February before the Western Society of Engineers, Prof. S. J. Zowski, of the University of Michigan, states that the designer of water turbines has control over pitting to a great extent. Even though the designer cannot do away with it entirely in every case, he says, it can at least be reduced to a minimum by observing the following rules in the design of the turbines:—

1. Avoid small bucket angles altogether in high head turbines and do not allow the angle under which the water approaches the runner to be very large.

2. Do not place the turbine any higher above the tail race than is absolutely necessary.

3. When designing low head runners which you may want to use at different occasions and under different conditions, use the largest bucket angles possible.

4. Do not design the buckets and guide vanes with an exaggerated parallelity at the ends; rather introduce a slight nozzle effect so that the flow will be accelerated throughout.

5. Make the guide and bucket vane tips pointed so that the eddies will be as short as possible.

6. Make the guide vane ends as thin as consideration of strength and building will allow.

7. Place the guide vanes far enough from the runner to allow the streams to join into a ring before they enter the runner.

8. Avoid all sharp turns and depressions. Check the design of the runner surface carefully to determine whether there is a throttling effect, which should be avoided absolutely. Do the same after the runner is built.

9. Examine the guide vanes in different positions and make sure that there is no place where the opening is smaller than at the discharge point.

The intensity of pitting depends also on the potential which we get from other causes than simple chemical action. We can, therefore, counteract pitting by removing these causes if it is possible to do this. Thus:—

1. We should try to get castings as homogeneous as possible, both in chemical and physical structure, and also as free of impurities as possible.

1. Where pitting is liable to occur, the parts should be machined all over. Finishing, like any other strain, changes the physical structure of the metal, and, therefore, partial finishing causes potential—even scratches and blows will do it.

3. The castings should be designed and moulded in such a manner that uniform cooling is secured. Strains due to unequal cooling will create potential.

DEVELOP WATER POWER TO SAVE COAL.*

By Leo G. Denis, B.Sc.,
Hydro-Electric Engineer, Commission of Conservation.

Canada depends upon the United States for a large portion of her coal supply both for domestic and industrial purposes; she is therefore much interested in the coal conditions obtaining there. A recent communication from Secretary F. K. Lane, of the U.S. Department of the Interior, shows how acute the situation has been made by the entrance of our neighbors into the war. One of the remedies urged, particularly applicable to Canada, is the immediate conservation of fuel by the efficient use of all available water-power.

Elimination of unnecessary consumption of coal is considered a problem of national interest and of immediate concern. New power requirements should therefore be met, so far as practicable, by utilization of hydro-electric energy; this would also apply to present steam-generating energy consuming coal or oil in its production.

Thus, all water available at water-power plants should be utilized to produce energy up to the capacity of the works and the requirements of the population and industries within transmission distance of the site; every facility should also be given for the efficient development of new sites. In regions where water-power can be made available, steam power plants should be operated only to carry loads in excess of those that can be carried by water-power plants.

The adoption of this course, in many cases, would mean cheaper operation, particularly in view of the rapidly increasing price of coal.

Every additional hydro-electric horse-power used in Canada means the yearly liberation of from 10 to 12 tons of coal for domestic heating or other purposes where hydro-electric energy cannot be so effectively substituted.

*From "Conservation."

The Lyman Tube and Supply Co., Limited, are now in their new building, 10 Ste. Sophie Lane, Montreal. It is a five-story and basement reinforced concrete structure. The basement is used as a machine shop; the first floor as a stock room for steel tubing; the top floor as offices; and a portion of the remaining space as stock room for railway supplies, hoists, etc., while the remainder of the space will be rented.