As soon as the opportunity is afforded, the apron controlling the incoming water will be lowered so as to decrease the velocity at the entrance, and the baffle on the outgoing side will be removed forward. It is hoped that then the sediment will be deposited more uniformly.

This hopeful but imperfect experiment is made public with the thought that it may stimulate others to make further experiments or lead them to publish information which they already have.

COUNCIL OF THE ENGINEERING INSTITUTE SUPPORTS BILL CLASSIFYING CIVIL SERVICE

IT has been decided by the council of the Engineering Institute of Canada that it is advisable to support the bill, now before the Dominion parliament, relating to the reclassification of the civil service of Canada, at least to the extent that this bill affects the engineering profession.

This decision was reached despite considerable dissatisfaction with the proposed classifications and remunerations. It was feared that any concerted opposition to the bill would mean that it would not be passed in any form at all this session, and possibly not for many years.

Recommendations have been made to the Civil Service Commission by the deputy ministers of the various departments, and those recommendations have been taken into consideration, and many changes will be made in the bill as a result. Although it is not clear that the recommendations will be accepted in full, the necessary machinery has been provided for dealing with individual cases. An advisory board to the Civil Service Commission has been appointed, and it is understood that a board of appeal will be constituted, so that any decision of the Civil Service Commission (acting on the advice of the advisory board or upon representation made by a deputy) regarding any classification, may be appealed and reconsidered.

The proposed bill elevates the engineers employed by the government, giving them a certain status which they never previously had, and also in the majority of cases grants increased remuneration, and for these reasons it is now urged by the council of the Engineering Institute that the proposed bill be supported by engineers throughout Canada.

LIGNITE BRIQUETTES NEXT AUGUST

FINAL decision as to the location of the plant to manufacture briquettes from the lignite deposits in south-eastern Saskatchewan and south-western Manitoba will be made in the immediate future, states R. A. Ross, chairman of the lignite utilization board, which held its first session in western Canada two weeks ago in the Manitoba legislative chamber at Winnipeg.

Mr. Ross stated that the board would visit the lignite deposits and would discuss the matter of the location of the $400,000 plant. He said that it is the intention of the board to let all contracts for the construction and equipment of the plant during the coming winter, construction to commence as soon as possible, and if the plans of the board do not miscarry, the plant will be producing briquettes by August, 1920. The capacity of the plant will be 30,000 tons a year and briquettes will be sold to the coal dealers in Winnipeg at approximately $9.40 a ton.

The briquettes will be made from coal supplied by the mines now operating in the district and the board will probably pay $1 a ton for this very poor grade of lignite. If the lignite is not available from the mines, the board will undertake mining operations.

When asked by Hon. T. H. Johnson how the board would fill the demand for briquettes if the demand is in excess of the supply, Mr. Ross replied that that is a political question. Mr. Johnson afterwards explained that the point upon which he was seeking information is whether the board will make a fair distribution of the product, under such conditions, between Manitoba and Saskatchewan.

PRESSURES IN PENSTOCKS CAUSED BY THE GRADUAL CLOSING OF TURBINE GATES*

By Ford Kurtz
Muscle Shoals, Ala.

MR. GIBSON has made a valuable addition to the too few and scanty English treatises on the mathematical theory of water-hammer. His treatment of the subject, however, is chiefly of value in obtaining, without the use of differential equations and from physical laws the import of which is readily grasped, formulas which give the same practical results as the much simpler and less cumbersome equations of Lorenzo Alliévi, first published in Rome, in 1903. These equations must not be confused with the confessedly approximate and inadequate formula designated by Mr. Gibson as the "Alliévi formula," and on which R. D. Johnson has apparently founded a pressure-time equation. The equations referred to are mathematically rigid formulas which take into account not only the effect of net head but also the compressibility of the water and the extensibility of the pipe and which, so far as the writer knows, have never before been published in English. In 1911, the writer prepared, for his own use, a translation of a German translation of Mr. Alliévi's work, and found the latter's treatment so remarkably comprehensive and thorough that he has used it ever since in all water-hammer problems. The German translation† can be found in the Engineering Societies Library.

TABLE 1

Interval in terms of $\frac{2L}{a}$	ϕ (t)	$\frac{F(t)}{H_0}$	$\frac{f(t)}{H_0} = \frac{F\left(t-\frac{2L}{a}\right)}{H_0}$	$z-1$	h_t, Alliévi	h_t Gibson	Percentage of divergence.
0	1.00000	0.00000	......	0.00000	0.00	0.00	.....
¼	0.95833	0.07338	......	0.07338	12.10	12.12	0.16
½	0.91667	0.15476	......	0.15476	25.53	25.53	0.00
¾	0.875	0.24503	......	0.24503	40.43	40.41	0.05
1	0.83333	0.34550	0.00000	0.34550	57.01	56.96	0.09
¼	0.79167	0.49780	0.07338	0.42442	70.03	69.94	0.13
½	0.75	0.66286	0.15476	0.50810	83.84	83.72	0.14
¾	0.70833	0.84160	0.24503	0.59657	98.43	98.31	0.12
2	0.66667	1.03529	0.34550	0.68979	113.82	113.63	0.17
¼	0.625	1.26152	0.49780	0.76372	126.01	125.78	0.18
½	0.58333	1.50125	0.66286	0.83839	138.33	138.05	0.20
¾	0.54167	1.75454	0.84160	0.91294	150.64	150.32	0.21
3	0.5	2.02152	1.03529	0.98623	162.73	162.42	0.19
¼	0.45833	2.30592	1.26152	1.04440	172.33	171.97	0.21
½	0.41667	2.60055	1.50125	1.09930	181.38	181.10	0.15
¾	0.375	2.90456	1.75454	1.15002	189.75	189.43	0.17
4	0.33333	3.21686	2.02152	1.19534	197.23	196.77	0.23
¼	0.29167	3.53609	2.30592	1.23017	202.98	202.49	0.24
½	0.25	3.86010	2.60055	1.25955	207.83	207.14	0.33
¾	0.20833	4.18755	2.90456	1.28299	211.69	211.00	0.33
5	0.16667	4.51715	3.21686	1.30029	214.55	213.79	0.35
¼	0.125	4.84719	3.53609	1.31110	216.33	215.75	6.26
½	0.08333	5.17707	3.86010	1.31697	217.30	216.71	0.26
¾	0.04167	5.50630	4.18755	1.31875	217.59	216.95	0.28
6	0.00000	5.83293	4.51715	1.31578	217.10	216.57	0.23
Average percentage	....	....	....	....	....	....	0.20

In presenting the exact formulas of Alliévi, the following nomenclature will be added to that of Mr. Gibson's paper:

$R_0 = aV_0/g$ = excess, or water-hammer, head due to instantaneous complete closure of gate.

$m = aV_0/gH_0$ = ratio of instantaneous water-hammer head to net head.

$F(t)$ and $f(t)$, or simply F and f = certain functions of time, t.

$z = (H_0+h_t)/H_0$ = ratio of total variable head to net head.

$\phi(t)$ = gate-opening at time, t, as a ratio of maximum gate-opening.

The exact formulas of Alliévi contain a term which makes it possible to determine the pressure at any point of the pipe line at any moment, but the writer is presenting only the simple form for determining pressure at the outlet,

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*Discussion (presented to the American Society of Civil Engineers) of Norman R. Gibson's paper (see September 4th and 11th issues of *The Canadian Engineer*).

†"Allgemeine Theorie über die veränderliche Bewegung des Wassers in Leitungen," von Lorenzo Alliévi, 1909.