

time factor upon stress and deformation, the writer wishes to refer to two papers read at the Twelfth Annual Convention of the American Concrete Institute in Chicago, February, 1916. One by Mr. Earl B. Smith, entitled "Concrete Flows Under Sustained Load," abstracted in The Engineering Record of March 4th, 1916. The other paper, entitled "Tests Showing Continued Deformation Under Constant Load," By Prof. A. H. Fuller and Prof. C. C. More, University of Washington, Seattle, Wash.

For carefully constructed dams the writer feels that the theory holds true. High, massive arches should be provided with contraction joints, say, 50 feet apart (on small dams these are not necessary as the section is more flexible), and the structure built up in alternate sections between contraction joints, the closing being effected during cold weather. The dam should not be built too fast, 20% plum stones should be used if practical. In addition, on important work, the contraction joints should be provided with grout pipes to facilitate the grouting of these joints under pressure during cold weather with reservoir empty after having been full at least once.

Such a dam structure is likely to follow the theory in its action; it is very likely to be absolutely watertight, and, of course, safe, if designed for reasonable stresses, say, less than 30 tons per square foot. According to the writer's view, careful construction is more important than the use of low stresses in the design. The concrete used should have a crushing strength of approximately 1,200 lbs. per square inch when 28 days old.

The writer wishes to point out the possibility of constructing an arch dam in such a manner that the stresses are actually better distributed than Formula 10, page 322, would indicate. This can be accomplished by using many plum stones in the concrete along the upstream face, and few or none along the downstream face, thereby making the shrinkage due to setting less along the upstream face, and also making the modulus of elasticity higher along this face, both of these conditions tending to effect a transfer of stresses from the downstream face towards the upstream face, and also tending to lessen the cantilever stresses at the downstream toe, making all stresses more uniformly distributed than the formulas would indicate they are.

LARS JORGENSEN.

San Francisco, Cal., April 11th, 1916.

OBITUARY.

COLIN McLEAN, one of the best-known contractors on the Atlantic seaboard, died at his home in Baltimore recently of pneumonia. He was born in Nova Scotia seventy-two years ago. Among his undertakings were the construction of the foundations for the Statue of Liberty and Brooklyn Bridge.

Dr. WILLIAM FREDERICK KING, chief astronomer of Canada and commissioner for the survey and marking of international boundaries, died on April 23, at the observatory residence, Ottawa, Ont. The late Dr. King was born at Stowmarket, Suffolk, England, 62 years ago, coming to Canada with his parents eight years later. He entered the service of the Dominion Government in 1872 as assistant astronomer on the North American Boundary Commission, and became inspector of surveys for the Dominion in 1881. He was made chief inspector of surveys in 1886 and chief astronomer of the Department of the Interior in 1890.

PERSONAL.

J. H. McMILLAN, of Cumberland, has been appointed inspector of mines with headquarters at Prince Rupert, B.C.

H. D. CAMERON has been appointed mechanical engineer of the Canadian Northern Railway, with office at Toronto, Ont.

JOHN AHEARN has been appointed superintendent of the Ottawa Street Railway. Mr. Ahearn has been with the company for 15 years.

A. J. RANDALL, formerly manager of the Saskatoon Iron Works, Saskatoon, Sask., has gone to Winnipeg, where he will take an officer's course.

G. V. HASTINGS has been appointed by the Winnipeg city council to succeed J. H. ASHDOWN as one of the commissioners on the Winnipeg and St. Boniface Harbor Board.

W. H. DINSMORE has been appointed traffic superintendent of the Vancouver city and suburban lines of the British Columbia Electric Railway, succeeding Mr. James Hilton, resigned.

FREDERICK KEFFER, mining engineer, Spokane, Wash., has left for Ashcroft, B.C., where he will take charge of constructing a concentrator for copper ores of the Highland Valley Company.

E. D. W. COURTICE, assistant superintendent of the John Street pumping station, city of Toronto, has resigned his position to enter the employ of the Hare Engineering Company, Limited, as assistant engineer.

R. S. LEA, M.Can.Soc.C.E., Montreal, has been in attendance at the session of the International Waterways Commission, Washington. Mr. Lea reported to the Commission on the level of the Lake of the Woods, Manitoba.

ARTHUR D. LITTLE will have charge of the new Canadian Research Bureau which is being established by the C.P.R. Mr. Little is a past president of the American Chemical Society and a member of the Institute of Chemical Engineers.

G. H. STEVENS has resigned his position as electrician-in-charge of the Fort Erie district for the Canadian Niagara Power Company, and commenced his duties as power apparatus specialist, Northern Electric Company, Montreal, on April 1st.

R. P. TRIMBLE, mining engineer, Portland, Ore., has returned from a trip to California and is leaving immediately for Telkwa, B.C., to commence development and take charge of operations at the Cassiar Crown Copper Company's property.

WILLIAM G. MURDOCH, city engineer of St. John, N.B., addressed the engineering students of the University of New Brunswick recently on the Suspension Bridge. His address was very instructive and much appreciated by the engineers.

Lieut. N. H. DANIEL, B.A.Sc., who left with the Divisional Cyclists Corps as a private and was later granted a commission in the Tenth Motor Machine Gun Battery, has been wounded. Lieut. Daniel is a graduate of S.P.S., Toronto, and was a member of the rugby team in his final year.

BLAIR RIPLEY, M.Can.Soc.C.E., who has had charge of C.P.R. grade separation in Toronto, has been appointed to command a new construction battalion with the rank of Lieutenant-Colonel. The battalion will be composed of men engaged in bridge building, railway construction, roadwork and general construction for overseas service.