Letters to the Editor

Effect of Time of Mixing on Strength of Concrete

Sir,—The writer desires to express his appreciation of Prof. Duff A. Abrams' paper, "Effect of Time of Mixing on the Strength of Concrete," published complete in *The Canadian Engineer* of July 25th, August 1st and August 8th, 1918.

Prof. Abrams deserves much credit not only for his work in connection with the making of the elaborate series of tests involved, but also for the painstaking care with which he has co-ordinated and analyzed the results of the tests and has thus placed the information obtained in an easily readable and thoroughly understandable form. The paper should be read carefully by all interested in concrete and should prove of especial interest and value

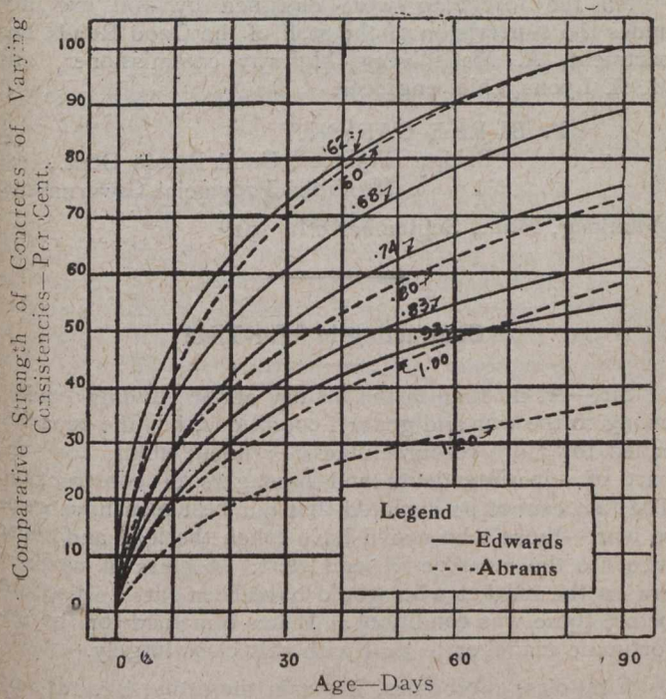

Fig. No. 1—A Comparison of the Strength of Concretes of Varying Consistencies, Based Upon Cement-Water Ratios Taken from Independent Tests

Above Diagram is Based upon the Following Two Diagrams, Figs. 2 and 3.

to engineers, architects, construction superintendents, inspectors and foremen engaged upon concrete design and construction work.

Insofar as the making of concrete is concerned, the importance of a more scientific method of proportioning the ingredient materials, and of a more definite knowledge of all the factors which tend to produce widely varying results affecting the strength and permanence of structures composed wholly or in part of concrete, must not be underestimated. Both safety and economy demand that as complete knowledge as possible should be obtained concerning all the elements involved. The increasing appreciation of such knowledge is evidenced in the number of papers and discussions appearing in the technical press and elsewhere.

However, we too frequently listen to such "stock arguments" as "Building codes specify an 'excessive' factor of safety"; or, "In this or that structure poor materials and poor workmanship were used"; all of which is intended to prove that a poorly built structure "still standing" is perfectly reliable for all requirements. Building codes are almost invariably conservative, but—

"The old order changeth, yielding place to the new."

And past experience gives proof that the "excessive" factor of safety will be reduced when improvement in concrete making has reached a stage warranting a change.

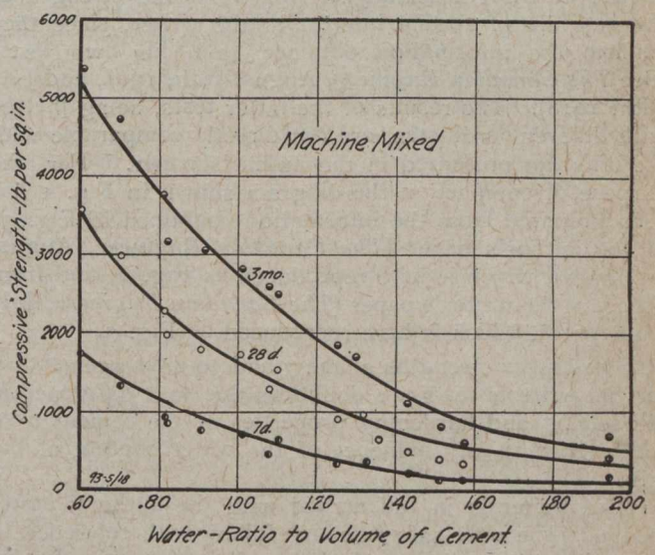

Fig. No. 2—Influence of Water on the Strength of Concrete

Reproduction of Fig. 31 of Prof. Abrams' Article.

That progress along these lines has not kept pace with the advancement made in reinforced concrete design is a well-known fact.

For very good reasons the "stock argument" man gives us no information concerning just what factor of safety exists in a structure "built with poor materials and poor workmanship," but fortunately just such experimental tests as those made by Prof. Abrams give us very conclusive evidence as to the influence of various factors entering into the workmanship portion of concrete making. An accumulation of such factors reduces the factor

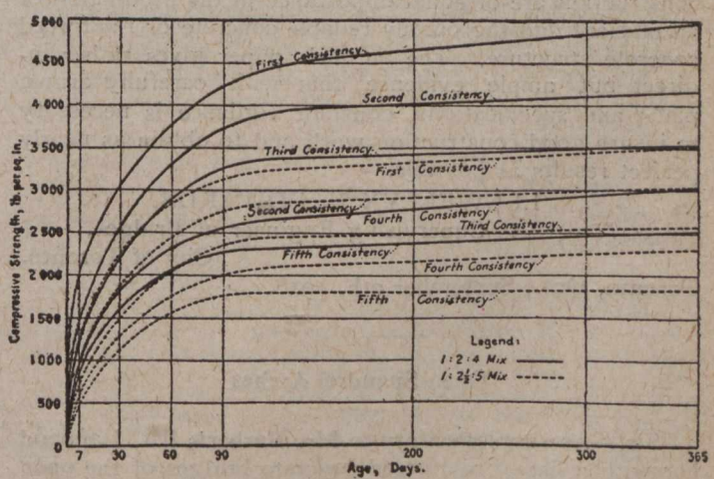

Fig. No. 3—Compressive Strengths of Test Cylinders—Consistency of Mix Tests

Reproduction of Fig. 2 of Capt. Edwards' Article.

of safety below unity, and the inevitable result is a collapsed structure with possibly an attendant loss of life.

So far as the writer is aware, the author's (Prof. Abrams') paper presents the first published data giving information concerning the effect of rate of rotation of