whatever. Whilst plain broth is preferable to the bile medium, which was variable in composition and too inhibitive, it is open to the objection that it yields an excessive number of anomalous results caused by overgrowths. It is exceedingly regrettable that the changes in the standard B. coli medium have always been so drastic as to render it almost impossible to compare present-day results with those obtained in the past, and have to this extent nullified the value of bacteriological records. Even though a method is not all that may be desired, it is often good policy to retain the old method for the sake of the continuity of comparable results, and the conservative policy is the only safe one when there is no guarantee that the revised methods are only ephemeral. Constant revision begets a desire for revision until it becomes a habit, and stability, which is the essence of standard methods, is never obtained. It is to be hoped that the policy of the committee on the B. coli question will be one of masterly inactivity for the next few years.

The committee have apparently not given the attention to McCrady's method for the enumeration of B. coli that it deserves. This is reported as involving complex mathematical calculations, whereas the preparation of tables is fairly simple, and once made they are good for all time. This method is the only accurate one for the examination of individual samples.

The report is pleasing in appearance, free from typographical errors, and should be added to the library of everyone who is interested in the examination of water and sewage.

Differential Calculus.—By H. B. Phillips, Ph.D., Assistant Professor of Mathematics in the Massachusetts Institute of Technology. Published by John Wiley & Sons, Inc., New York City; Canadian selling agents, Renouf Publishing Co., Montreal, P.Q. First edition, 1916. 162 pages, 5 x 7½ ins., illustrated, cloth. Price, \$1.25 net. (Reviewed by R. L. Hearn, B.A.Sc., Hydraulic Department, Hydro-Electric Power Commission of Ontario.)

Dr. Phillips, in this little book on the differential calculus, has treated this subject admirably from an engineering student's viewpoint. He has covered the differential calculus very clearly and concisely, and has presented it in such a manner that many of the obstacles that the average student encounters in the ordinary treatise on this subject are cleared away.

As the author states in his preface, a few central methods have been taken, and these, in turn, have been applied to a great variety of examples. The object of this is to drill the student in first principles, with the result that he will gain confidence in himself and secure a solid foundation upon which to base the more advanced problems.

Doubtless, the calculus is one of the most powerful instruments the engineer has at his disposal, and one of his greatest assets when he has mastered it. This book will be found a most useful classroom text for engineering students.

Contents: Chap. I., Introduction. II., Derivative and Differential. III., Differentiation of Algebraic Functions. IV., Rates. V., Maxima and Minima. VI., Differentiation of Transcendental Functions. VII., Geometrical Applications. VIII., Velocity and Acceleration in a Curved Path IX., Rolle's Theorem and Indeterminate Forms. X., Series and Approximations. XI., Partial Differentiation. Supplementary Exercises. Answers. the

me

alı

ev

of.

pa

TI

ar

ty

W

if

SI

of

L

a

e

b

b

it

ti

a

Wharves and Piers: Their Design, Construction and Equipment. — By Carleton Greene, A.B., C.E., M.Am.Soc.C.E. Published by the McGraw-Hill Book Co., Inc., New York. First edition, 1917. 248 pages, 155 illustrations, cloth, 6 x 9 ins. Price, \$3. (Reviewed by F. W. Cowie, M.Can. Soc.C.E., Chief Engineer Harbor Commissioners of Montreal.)

In the preface the author states, by way of apology, that the book was written in response to an editorial in one of the engineering journals, calling attention to the lack of American books on the subject of wharves and piers.

A science, or even a principle, of engineering is not limited to America, nor even to New York. The definition of such terms as wet docks indicates that the author's experience and point of view is quite, and only, American. The "requirements of a wharf" would also appear to refer to the considerations applicable to a wharf in New York harbor.

Port authorities and designers in America are, in recent times, coming to understand that a good mixture would possibly result from a compromise of European solidity and permanence with American adaptable, cheaply and more quickly built structures. They would welcome a carefully prepared treatise on modern design and records of successful and non-successful operation.

Before inspiration comes to the originator of a scheme he must be familiar with the features of previous designs and the principles of former practice.

In America, harbor design and construction has not had the vogue of the development of either canals or railways. Competition in transportation has necessitated, in the case of both canals and railways in America, a perfection of routes, permanence of construction and economy of operation.

Canals, unique, majestic, and eminently successful, have added to the name and reputation of the engineer in America. Railways are unquestionably a great success, both as to design and operation. All honor to the foresight of the projectors and capitalists who undertook, to the engineers who designed, and to the builders who carried out the daring and difficult work in a comparatively new country! In both of these types of enterprise the principles of success have been necessity, excellence of design and efficiency of operation.

Can the wharves and piers of North American harbors lay claim to the same records of excellence as compared with similar designs or constructions in other continents and their ports?

The author gives as his opinion that there is a tendency at the present time to slight the advantages of timber construction for wharves and to overestimate those of reinforced concrete. Timber wharf construction may have had its justification when timber, especially oak, was plentiful and cheap, when the successful locations were not sufficiently demonstrated to warrant comprehensive schemes, and when capital for permanent developments was limited. It does seem to be a matter for careful attention as to whether the public in the United States of America will long accept wooden wharves and non-permanent constructions in the greatest port in the world, located in a city whose two great railroads have not hesitated to spend hundreds of millions for their passenger terminals.

If a magnificent and attractive terminal is required by each railroad, how much more an ocean terminal for