

**THE THEORY AND PRACTICE OF  
HYDRO-MECHANICS. A SERIES  
OF LECTURES DELIVERED AT THE  
INSTITUTION OF CIVIL  
ENGINEERS, SESSION 1884-85**

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The Theory and Practice of Hydro-Mechanics. A Series of Lectures Delivered at the Institution of Civil Engineers, Session 1884-85 by Various

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## P R E F A C E.

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IN the "Description of a Civil Engineer," written at the end of the year 1827 by Thomas Tredgold, Hon. M. Inst. C.E., (Minutes of Proceedings, vol. xxvii., p. 181), the science of hydraulics is stated to be one of the great bases on which the successful practice of engineering is founded. Hence, Water, in its varied aspects, as made subservient to "the use and convenience of man," came to be selected for the course of lectures on "The Theory and Practice of Hydro-Mechanics," constituting the present volume. The outline of Tredgold has been to a large extent followed by the Lecturers. Water has been dealt with in its general effects on the configuration of the surface of the earth, while the natural sources of supply, and the method of its collection and distribution for the use of towns, have been described. Water, as distinct from steam, has also been regarded as an agent for operating various classes of machines, and next as presenting, in trained rivers and in canals, a highway for internal or Inland Navigation. Subsequently the waves of the ocean have been considered in their influence on the design and construction of Harbours, Ports, and Docks, as well as on the Forms of Ships.

With this series the Lectures will for the time cease, as it was never intended that they should form a permanent addition to the business of the Institution, but should only be given occasionally, and under exceptional circumstances.

It is a source of much gratification to the Council that the above Lectures, as well as those on "The Practical Applications of Electricity," and on "Heat in its Mechanical Applications," were all delivered by Members of the Institution.





## CONTENTS.

15 January, 1885.

	PAGE
PHYSIOGRAPHY. By JOHN EVANS, V.P. and Treas. R.S., Assoc. Inst. C.E. (1 plate) . . . . .	1

19 February, 1885.

WATER-SUPPLY. By WILLIAM POLE, F.R.S., M. Inst. C.E., Honorary Secretary (1 cut) . . . . .	23
---	----

5 March, 1885.

WATER-MOTORS. By PROF. W. C. UNWIN, B.Sc., M. Inst. C.E. (12 cuts) .	69
--	----

19 March, 1885.

INLAND NAVIGATIONS IN EUROPE. By SIR CHAS. A. HANTLEY, K.C.M.G., M. Inst. C.E. (4 plates) . . . . .	101
--	-----

16 April, 1885.

TIDES AND COAST-WORKS. By THOS. STEVENSON, Pres. R.S.E., M. Inst. C.E. (10 cuts) . . . . .	161
---	-----

7 May, 1885.

FORMS OF SHIPS. By SIR E. J. REED, K.C.B., F.R.S., M.P., M. Inst. C.E. (1 plate) . . . . .	183
---	-----

INDEX . . . . .	205
-----------------	-----



THEORY AND PRACTICE  
OF  
HYDRO-MECHANICS.

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15 January, 1885.

Sir FREDERICK J. BRAMWELL, F.R.S., President,  
in the Chair.

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“Physiography.”

By JOHN EVANS, V.P. and Treas. R.S., Assoc. Inst. C.E.

THE Council of the Institution of Civil Engineers having determined on the delivery of a course of lectures on the Theory and Practice of Hydro-mechanics have done me the honour of requesting me to give the first of these lectures, and have suggested “Physiography” as my subject. At the time that I expressed my willingness to comply with this request, I hoped that I should be able to find sufficient spare hours to do some justice to the subject, but, unfortunately, owing to the absence of the President of the Royal Society, unexpected duties have devolved upon me, and the small modicum of leisure which my ordinary avocations allow me has been considerably cut down. I must, therefore, beg for some indulgence if in the following remarks I seem to treat my subject in an inadequate manner, and do not in some respects enter into the amount of detail which might not unreasonably have been expected.

But what is my subject? The word “Physiography”—for which as a title to my lecture I must deny all personal responsibility—is one of very wide import, and has been defined in the dictionaries as meaning “a description of nature, or the science of natural objects.” I shall not attempt to accept the word in this wide sense, or the limits of one, or even of a dozen lectures, would not suffice for the treatment of the subject. And moreover it has already been admirably worked out by Professor Huxley in his course of lectures at the London Institution, which have been expanded into a most instructive volume with the title “Physiography,” a work that I have found of some service in preparing for this evening. What I hope to do, is to bring before you