

**THE PRESENT PRACTICE OF SINKING
AND BORING WELLS; WITH
GEOLOGICAL CONSIDERATIONS
AND EXAMPLES OF WELLS
EXECUTED; WATER SUPPLY**

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The present practice of sinking and boring wells; with geological considerations and examples of wells executed; Water supply by Ernest Spon

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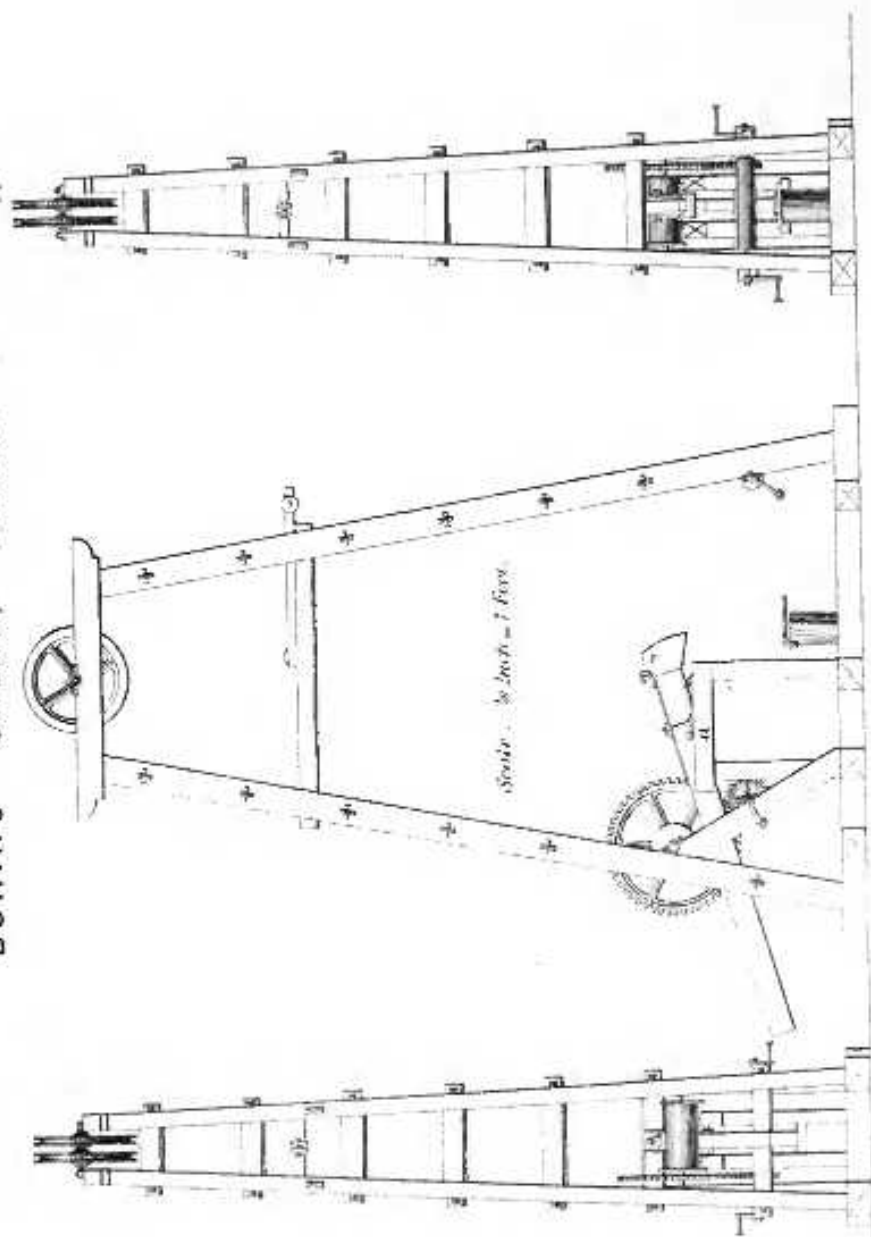
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BORING SHEAR FRAME.



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WATER SUPPLY.

THE PRESENT PRACTICE

OF

SINKING AND BORING WELLS;

WITH GEOLOGICAL CONSIDERATIONS AND
EXAMPLES OF WELLS EXECUTED.

BY

ERNEST SPON,

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INSTITUTE; AND OF THE GEOLOGISTS' ASSOCIATION.



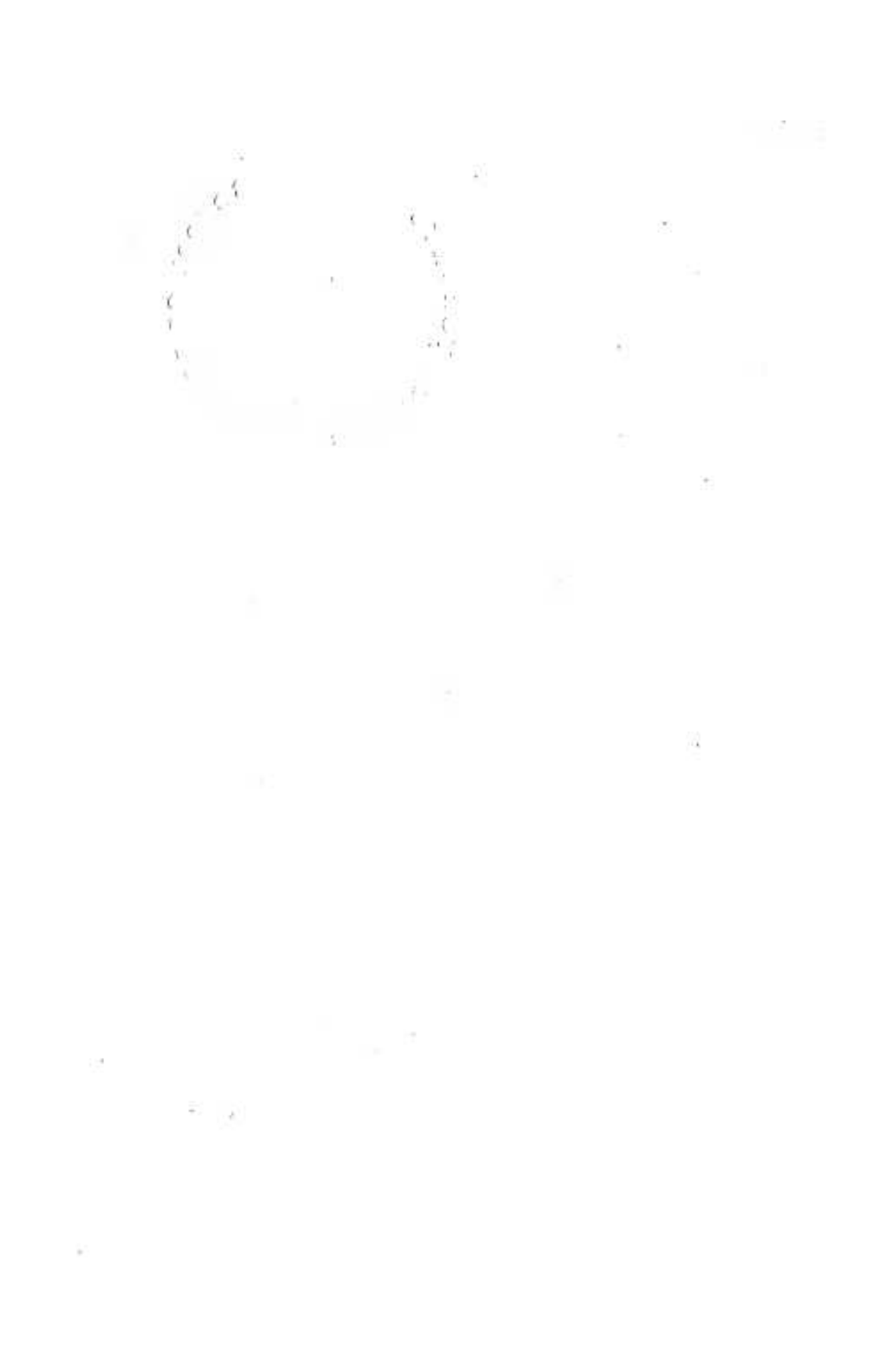
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1875.



PREFACE.

IN modern times the tendency of the inhabitants of a country to dwell together in large communities, and the consequent need for accumulating in a particular locality a sufficient supply of water for household, social, and industrial purposes, have rendered necessary the construction of such engineering works as impounding reservoirs and wells, by means of which the abundant measure of sparsely populated districts may be utilized, and water obtained not only free from those impurities which it collects in densely populated districts, but also in greater quantity than the natural sources of the district are capable of supplying.

Of the works mentioned, wells have fairly a primary claim upon the notice of the sanitary engineer, for, without undervaluing other sources of supply, the water from them certainly possesses the advantage over that from rivers and surface drainage, of being without organic admixture and unimpregnated with those deadly spores which find their way into surface waters and are so fatal in seasons of epidemic visitation. A great deal of the irregularity in the action of wells, and the consequent distrust with which they are regarded by many, is attributable either to improper situation or to the haphazard manner in which the search for underground water is frequently conducted. As regards the first cause, it cannot be too strongly stated that extreme caution is necessary in the choice of situations for wells, and that a sound geological knowledge of the country in which the attempt is to be made should precede any sinking or boring for this purpose, otherwise much useless expense may be incurred without a chance of success. Indeed,

the power of indicating those points where wells may, in all probability, be successfully established, is one of the chief practical applications of geology to the useful purposes of life.

Two cases in point are before me as I write; in the one 15,000*l.* has been spent in sinking a shaft and driving headings which yield but little water, found abundantly at the same depth in a mine adjoining; and in the other a town would be, but for its surface wells, entirely without water, the water-works having been idle for weeks, and the sinkers are feebly endeavouring to obtain water by deep sinkings, in a position where its occurrence in any quantity is physically impossible. Ample supplies could be obtained in both these cases by shifting the situation a few hundred yards.

The subject-matter of the following pages is divided into chapters which treat of geological considerations, the new red sandstone, well sinking, well boring, the American tube well, well boring at great depths, and examples of wells executed and of localities supplied respectively, with tables and miscellaneous information. Each system with its adjuncts has been kept complete in itself, instead of separating the various tools and appliances into classes, the plan adopted in the most approved French and German technical works. This, however, when too rigidly adhered to, as is the case with German works in particular, renders it troublesome for even a practised engineer to grasp a strange system in its entirety, while the pupil is wearied and retarded in his reading by an over-elaborate classification.

It may, perhaps, be remarked that undue prominence has been given to the tertiary and cretaceous formations, but it is urged in extenuation that they happen to underlie two of the most important cities in Europe, and that they have, in consequence, received a more thorough investigation than has been accorded to other districts. The records of wells in many formations are singularly scanty and unreliable, but it is hoped that the time is not far distant when the water-bearing characteristics of strata, such as the new red sandstone and permian, will receive proper attention, and that correct official records of

well-work will be found in every locality, as this alone can rescue an important branch of hydraulic engineering from the charge of empiricism.

In the course of the work the writings of G. R. Burnell, C.E., Baldwin Latham, C.E., M. Dru, Emerson Bainbridge, C.E., G. C. Greenwell, and other well-known authorities, have been freely referred to, particular recourse having been had to the works of Professor Prestwich, F.G.S.

I am indebted to Geo. G. André, C.E., F.G.S., Messrs. S. Baker and Son, and Messrs. T. Doewra and Son, for many suggestions and much valuable information; to Messrs. Doewra special thanks are due for some of the important sections illustrating chapter vii.

Any claim to attention the book may deserve is based upon its being an attempt to embody, in a collected form, facts and information derived from practice, or from various sources not accessible to the majority of those engaged in the superintendence, or otherwise interested in the construction of wells.

ERNEST SPON.

16, CRAVEN STREET, CHARING CROSS,
June, 1875.

