

**ENGINEER'S VALUING ASSISTANT; BEING
A PRACTICAL TREATISE ON THE
VALUATION OF
COLLIERIES AND OTHER MINES WITH
RULES, FORMULAE, AND EXAMPLES;
ALSO A SET OF VALUATION TABLES**

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Engineer's valuing assistant; being a practical treatise on the valuation of collieries and other mines with rules, formulae, and examples; also a set of valuation tables by H. D. Hoskold & Peter Gray

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H. D. HOSKOLD & PETER GRAY

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ENGINEER'S VALUING ASSISTANT

BEING A PRACTICAL TREATISE ON THE
VALUATION OF COLLIERIES AND OTHER MINES

WITH RULES, FORMULÆ, AND EXAMPLES

ALSO

A SET OF VALUATION TABLES

CALCULATED ON THE PRINCIPLE OF
ALLOWING INTEREST TO A PURCHASER OF ANY ANNUITY, BENEFIT, OR
INCOME, DERIVED, OR TO BE DERIVED FROM MINES OR
OTHERWISE, AT ONE RATE OF INTEREST AND REDEEMING THE
CAPITAL INVESTED AT ANOTHER PRACTICAL RATE
OF INTEREST

AND

TABLES OF VALUE

SHOWING THE DISCREPANCIES EXISTING IN THE ORDINARY TABLES
OF PRESENT VALUES AND THE ERRORS CREATED BY THEM

BY

H. D. HOSKOLD

CIVIL AND MINING ENGINEER; CHIEF OF THE ARGENTINE GOVERNMENT
NATIONAL OFFICES OF MINES AND GEOLOGY, ETC.

WITH AN INTRODUCTORY NOTE

BY THE LATE

PETER GRAY

HONORARY MEMBER OF THE INSTITUTE OF ACTUARIES
AUTHOR OF 'TABLES AND FORMULÆ FOR THE COMPUTATION OF LIFE CONTINGENCIES' ETC.

SECOND EDITION

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PREFACE

TO

THE PRESENT EDITION.

Soon after the first edition of this work appeared in 1877, copies of it became so scarce that suggestions were frequently made to the author to publish a new edition of it; but, at that time, important professional duties and undertakings led him to foreign countries, including the Argentine Republic, in the latter of which he has had the honour of occupying the position of Chief Advising and Acting Mining Engineer to the National Government for over a period of 18 years. The onerous duties of that office, and other matters connected therewith, absorbed the whole attention of the author, and it is only recently that he has been able to prepare a second edition of his 'Engineer's Valuing Assistant' for the press.

For various practical reasons, the original book of 1877 has been reduced in bulk; but, at the same time, everything essentially necessary to aid the profession in the valuation of mines and other properties has been retained in the present edition.

The deferred periods, in Table X, have been reduced from 10 to 4 years, for the reason that it is considered that a period of from 4 to 5 years is a sufficiently long time to wait before benefit accrues from mining undertakings.

Tables XIV, XV, XVI, XVII, and XVIII, giving deferred periods up to 5 years, have been retained to meet special cases.

The general examples of mine-valuation, occurring in the first edition, are omitted, a single leading example, with peculiar characteristics, having only been retained.

The excellent and important 'Introductory Note,' contributed to the first edition by the late lamented Mr. Peter Gray, one of the ablest mathematicians of his time, has also been retained, not only on account of its great value in demonstrating scientifically the correctness of the principles laid down by the author, but as a memorial to that distinguished scientist. The references only have been altered, to agree with present pagination.

The author again takes this opportunity of expressing his thanks to the scientific press for the favourable opinions manifested upon the merits of the first edition, and he is content to present this second edition to their consideration, liberality, and just appreciation.

BUENOS AIRES: May 1, 1904.

PREFACE
TO
THE FIRST EDITION.

THE efforts put forth in the literary world at the present time, and the facility of production and means of distributing the results of such labours, are truly astonishing, and without a parallel in past times, and for the multiplication of Books of all classes there seems to be a growing necessity, but although various subjects connected with Arts, Sciences, and Manufactures have been largely treated upon, that of the Valuation of Mines has been entirely neglected.

This circumstance is the more surprising inasmuch as the subject is one of great national importance, affecting as it does, —at least in some degree—the interest of all those who are connected with Mining and other branches of industry.

In these times, commercial prosperity in general seems to depend more or less upon its relations to honest and successful Mining adventure; and although Mining and other branches of trade have received and will still receive healthy stimulus, nevertheless there are periods of reaction, causing depression, the origin of which it is not always easy to trace and explain. However, in very many cases it may be referred to inflated notions of speculation, creating undue excitement, error in judgment, and an unwarrantable lavish expenditure of capital

upon properties not capable of yielding profits compatible with the outlay.

Immense sums of money are frequently spent in the purchase of mineral properties, and it is a common occurrence that much more is paid in order to secure them than they are really worth, and cases coming within experience are by no means few where the estimated value has exceeded the true value by 40 or 50 per cent., due in many cases to the employment of an erroneous years' purchase. Table XII exhibits the *source* of such discrepancies.

True value, and the economic expenditure of money upon the purchase and development of any property, are therefore matters of such paramount importance, that it has been considered necessary for the general interests of the public to point out in this work, and illustrate by ample practical examples, how such discrepancies as those referred to have arisen, and the means necessary to be adopted in guarding against such an enormous waste of Capital.

Taking a rational view of the matter, it is desirable that any mode of deducing Values, having for its basis nothing better than an approximate rule, or a mere guess, should yield to more accurate treatment; and as the interest at stake is so great, and almost universal, it seems to be most essential that the public should possess some standard work of reference—embodying information and easy rules of a reliable and practicable character, so that by mere consultation, the comparative merits and value of Mineral and other kinds of property that may come under consideration may be readily determined. Hitherto, however, no work of this description and specially devoted to this subject has appeared.

The present work is therefore an attempt to supply this need; and it has been written chiefly with a view to facilitate such calculations as are required generally, and especially by

those of the Profession on whom more particularly devolve the important and onerous duties connected with Valuation, to introduce a general system based upon equitable and scientific principles, and to assist in obtaining more uniformity and accuracy in general practice.

In past years, when I was extensively engaged in valuing coal and other mines, the labour connected with the necessary and frequent calculations involving the use of rules derived from first principles became so tedious, that I determined once for all to prepare full and complete sets of Tables required, to be employed in Valuation as *labour-savers*.

After much thought and labour this task has been completed, and the result supplied by the publication of this work, in which I have endeavoured throughout to render the treatment of the subject as simple and intelligible as its nature seemed to admit of, and, as I believe, free from all unnecessary mathematical surroundings.

I particularly desire to record my thanks to many friends for their kindness in expressing a favourable opinion of my work while it was in MS., and for encouragement which I received from them as to the necessity for the publication of such a work. Among these gentlemen I may specially mention such eminent authorities as Peter Gray, Esq., F.R.A.S., F.R.M.S., M.Inst.A., London; Robert Hunt, Esq., F.R.S., Keeper of the Crown Mining Records, Museum of Practical Geology, Jermyn Street, S.W.; J. Pease, Esq., M.P., Hutton Hall, Gisborough; Warrington W. Smyth, Esq., M.A., F.R.S., F.G.S., Chief Inspector of Crown Mines, Museum, Jermyn Street; D. T. Ansted, Esq., M.A., F.R.S., F.G.S., Melton, Suffolk, and 4 Westminster Chambers, Westminster; Emerson Bainbridge, Esq., M.E., Assoc. Inst.C.E., Mining Engineer to the Duke of Norfolk, Nunnery Colliery Offices, Sheffield; Thos. Wm. Lewis, Esq., F.G.S., M.Inst.C.E., Civil and Mining Engineer (*Past President of the South Wales Inst. of Engi-*