

**THE PRACTICAL MINERS' GUIDE;  
COMPRISING A SET OF  
TRIGONOMETRICAL TABLES ADAPTED  
TO ALL PURPOSES OF OBLIQUE OR  
DIAGONAL, VERTICAL, HORIZONTAL,  
AND TRAVERSE DIALLING**

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The practical miners' guide; comprising a set of trigonometrical tables adapted to all purposes of oblique or diagonal, vertical, horizontal, and traverse dialling by J. Budge

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**J. BUDGE**

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**DIALLING,**

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SLIDES, TUNNELLING, INACCESSIBLE DISTANCES, HEIGHTS, &c.

Also a Treatise on the Art and Practice of

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WITH TABLES WHICH EXHIBIT AT ONE VIEW THE VALUE OF ASSAYED ORES, RULES  
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Together with a Collection of Essential

**TABLES, RULES, AND ILLUSTRATIONS**

EXCLUSIVELY APPLICABLE TO MINING BUSINESS.

*The whole introduced and exemplified in the most plain and practicable manner.*

**BY J. BUDGE.**

**NEW EDITION.**

LONDON:  
**LONGMANS, GREEN, AND CO.**  
1866.



TO

**BENJAMIN TUCKER, ESQ.**

SURVEYOR-GENERAL OF THE DUCHY OF CORNWALL,

AND

**JOHN TAYLOR, ESQ.**

DIRECTOR OF BRITISH AND FOREIGN MINING INSTITUTIONS.

GENTLEMEN,

THE propriety of composing an address under this head did not, until of late, occur to my imagination, and with much trepidity and circumspection do I now attempt the difficult task. My apprehensions arise from a consciousness of the extreme delicacy of the undertaking, and the danger I have to encounter, arising from the probability of a misconstruction being put on the sentiments I may advance; nevertheless I feel an enlivening hope, springing up as I proceed, that I shall not be unhappy enough to make an insertion of a single sentence but what you will either approve or palliate, and, this point secured, I shall be comparatively indifferent of all other consequences.

The succeeding remarks will prove explanatory of my motives, and I trust will be deemed a satis-

factory apology for my adventuring into the dedicatory labyrinth, from whence but few escape without considerable loss in the estimation of the most discerning part of their readers.

It is a prevalent opinion that gentlemen sometimes allow authors to make an ostentatious display of their influential names in the front of their works, while at the same time they possess not the slightest knowledge of the composition, or of ever having seen a line thereof, until a finished copy has been formally presented them, adorned with their illustrious names and the writer's adulatory compliments; but further, it is notorious that composers not unfrequently take the unwarrantable franchise of introducing the honourable names of eminent persons for this purpose without ever obtaining or even soliciting their permission for so doing.

These considerations have induced me, with great diffidence, and contrary to my preconception of the matter, to frame this respectful address; for, after mature deliberation, I have been led to conclude that it would be doing an act of injustice to you, to myself, and to those who may be interested in the contents of this volume, were I to forbear giving publicity to the fact, that it was not until you had investigated the most essential parts of the manuscript, and felt assured that it was calculated to answer the end designed, and thereby prove



advantageous to the mining interest, that you consented to honour it with your countenance, and allow your respected names to be introduced in a patronal capacity.

Without fear of the imputation of flattery, I may with confidence remark, that your great experience, knowledge, celebrity, and interest in mining affairs, are calculated to inspire a reasonable hope that, through your support and precedent, success will attend my humble efforts, and I shall ultimately obtain a fair pecuniary remuneration for my labours; but, necessitous as I am, the animating thought of my exertions becoming instrumental in yielding an important benefit to a considerable and most useful class of my fellow-men, is by far the greatest cause of my exultation.

It now only remains for me to acknowledge the obligations I feel, not for mere nominal patronage, but for the actual assistance I have received at your hands, whereby I have been enabled to overcome the formidable obstacles which presented themselves against the accomplishment of this difficult and embarrassing enterprise. And at the same time I would not dare neglect to return my unfeigned thanks, in the most undisguised and solemn manner, to that supreme and gracious Power whose benign and omnipotent influence has been manifestly exercised in my behalf throughout the arduous undertaking.

Possibly this digression may be condemned as unseasonable, unsuitable, and *unfashionable*, by those who fancy themselves too wise and independent to allow it to be obligatory upon them openly to acknowledge the aid of Divine Providence in all their successful engagements; but desirous as I am of giving universal satisfaction, far rather will I endure the scorn and sarcasms of such individuals, than avoid their contumely at the expense of an approving conscience, and the approbation of the truly wise and honourable.

In conclusion, I sincerely beg excuse for the almost unprecedented latitude I have unintentionally taken for this subject, and allow me most cordially to congratulate you on the high degree of respectability as well as the national utility and importance the mining system of Great Britain has recently acquired, and to which, it is generally acknowledged, your example and instrumentality have materially contributed.

That you may live long and prosperously, and that uninterrupted success may attend your every endeavour to promote your own and the public welfare, is the sincere and hearty desire of,

Gentlemen,

Your most grateful,

most obedient,

and very humble servant,

THE AUTHOR.

## PREFACE.

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THROUGHOUT this volume the benefit of the Practical Miner has been constantly kept in view; and although the Tables may be successfully used on other occasions, yet we have professedly the mining interest solely for our object.

It is hoped that the curious examiner will find no flagrant violation of the rules of composition or mathematical order; but to any who may be disposed to search for defects we beg to state, that the work has been prosecuted and accomplished amidst numerous disadvantages, among which, the frequent interruptions arising from the almost incessant duties of a mining avocation have not been the least perplexing. But, notwithstanding all this, we feel it incumbent on us to state, in defence of the calculations, that, so far as Hutton's celebrated Logarithms, compared with those of other eminent authors, can be relied on as a foundation, together with the utmost care in, and repetition of, every single operation, supported by numerous subsequent proofs, both theoretical and practical, we are warranted in alleging our conviction, that the Tables may be received and applied to the most difficult and important operations in dialling, with the utmost confidence.