

A
GLOSSARY OF MINING TERMS.

With Illustrations and Geological Survey Map Signs.

~~~~~  
COMPILED BY

CAPTAIN C. C. LONGRIDGE, M.F.I.M.E., M.I.M.E., &C.,  
*Consulting & Mining Engineer.*

—————  
HALF - A - CROWN.  
—————


LONDON: "THE MINING JOURNAL" OFFICES,  
18, FINCH LANE; AN. 3, DORSET BUILDINGS, E.C.

1897.

CSA  
3<sup>50</sup> 9/77

★ OF GEMS & GEM CUTTING ★

MINERALOGY · EMERALD · AND OTHER · BERYLS · CATALOG



EX LIBRIS

JOHN · SIN · KAN · KAS

★ MINERALS AND STONES · OF · NORTH · AMERICA · PROSPECTING · FOR · GEM ·

T-2

THE UNIVERSITY OF CHICAGO  
 LIBRARY  
 540 EAST 57TH STREET  
 CHICAGO, ILL. 60637

# C. C. LONGRIDGE,

M.F.I.M.E. M. (N. Eng.) I.M.E.; M.I.Mech.E.; Assoc. I. Civil E.

(AGENTS IN MOST PARTS OF THE WORLD.)

## Consulting & Mining Engineer.

|                                 |                                     |                              |                                 |
|---------------------------------|-------------------------------------|------------------------------|---------------------------------|
| GOLD FIELDS OF<br>MATABELELAND. | CONCORDIA CON-<br>SOLIDATED (LTD.). | GOLDEN RIDGE<br>PROPRIETARY. | GOLD FIELDS<br>OF INDIA (LTD.). |
|---------------------------------|-------------------------------------|------------------------------|---------------------------------|

15 GEORGE STREET, MANSION HOUSE AND 37 WALBROOK, E.C.

REPORTS ON MINING PROPERTIES. MINES MANAGED.

LONDON OFFICES PROVIDED.

## LONGRIDGE'S MINE REPORT FORMS.

FORM A—For Mines in Stage of Development.

FORM B—For Mines in Working Order.

*Price, 1s. PER DOZEN (Postage Extra).*

A LIST of all GOLD METALLURGICAL PATENTS taken out in the United Kingdom has been compiled by CAPT. LONGRIDGE.

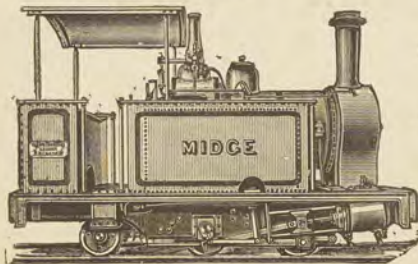
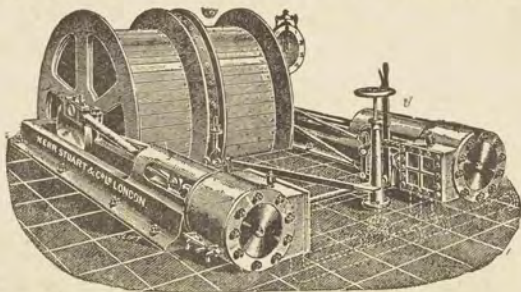
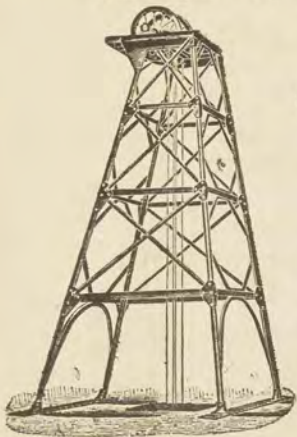
~~~~~  
Information supplied for a fee of ONE GUINEA.

KERR, STUART & CO. LD.

Head Office: 20 Bucklersbury, London, E.C. Works: Stoke-on-Trent.

Telegraphic Address: MELISS, LONDON.

CATALOGUES ON APPLICATION.



PORTABLE AND PERMANENT
RAILWAY LOCOMOTIVES,
WAGONS AND CARRIAGES,
AND STATIONARY PLANT.

WINDING and SINKING ENGINES,
AND ALL
MINING MACHINERY.



TELEGRAMS
Joseph Evans & Sons
 CULWELL WORKS
Wolverhampton ENGLAND
 HYDRAULIC ENGINEERS

Telephone No. 7,039.

FIRST AWARDS EVERYWHERE.

12,000 PUMPS IN STOCK AND
 PROGRESS.

TRADE



MARK.

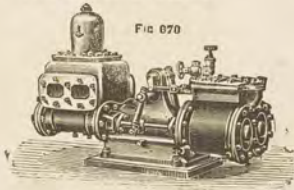
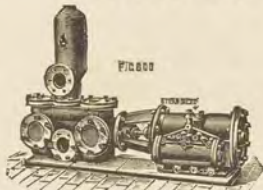
Apply for Catalogue No. 3B.

LONDON OFFICE :

16 UNION COURT OLD BROAD ST., E.C.

DEPOTS—Newcastle-on-Tyne, Glasgow,
 Manchester, Wakefield, & Cardiff.

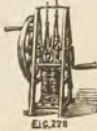
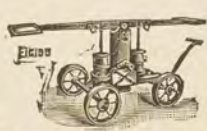
LARGEST MAKERS OF PUMPS & PUMPING
 MACHINERY IN THE WORLD.



"Cornish" Sinking Pump. "Cornish" Steam Pump.

"Duplex" Steam Pump.

"Ram" Steam Pump.



STEAM, HAND, HORSE, POWER and WIND PUMPS, also HYDRAULIC RAMS.

E. & F. N. SPON'S RECENT PUBLICATIONS.

With 260 Plates, 2 vols., Royal 4to, Cloth, £3 3s.

PUMPS AND PUMP MOTORS.

A Manual for the Use of Hydraulic Engineers. By PHILIP R. BJÖRLING, Hydraulic Engineer, Author of a Practical Handbook on "Pump Construction," &c.

With 206 Illustrations, Crown 8vo, Cloth, 9s.

WATER OR HYDRAULIC MOTORS.

By PHILIP R. BJÖRLING.

With 53 large Plates, 200 pp., Demy 8vo, Cloth, 48s.

PUMPS AND PUMPING MACHINERY.

PART I. By F. COLYER, M.Inst.C.E., M.Inst.M.E. Author of "Hydraulic Machinery," &c. Second Edition, revised, enlarged, and new matter added.

With Illustrations, 472 pp., French Morocco, Limp, Gilt Edges, Post 8vo, 12s. 6d.

THE MINERS' POCKET BOOK.

A Reference Book for Miners, Mine Surveyors, Geologists, Mineralogists, Millmen, Assayers, Metallurgists, and Metal Merchants, all over the World. By C. G. WARNFORD LOCK. Second Edition.

With Illustrations, 8vo, Cloth, 21s.

Economic Mining.

A Practical Handbook for the Miner, the Metallurgist, and the Merchant. By C. G. WARNFORD LOCK, Mem. Inst. of Mining & Metallurgy, Author of "Practical Gold Mining" and the "Miner's Pocket Book," Superintendent Wentworth Gold Fields Proprietary Co. Ltd., Lucknow, New South Wales.

8vo, Cloth, 21s.

A PRACTICAL MANUAL OF MINERALS, MINES, AND MINING.

Comprising Suggestions as to the Localities and Associations of all the Useful Minerals, full descriptive for Qualitative and Quantitative Analyses of each of these Minerals, with Hints upon various Mining Operations. By Professor H. S. OSBORN, LL.D., Author of "The Metallurgy of Iron and Steel," &c. 175 Engravings. Second Edition, revised and enlarged.

With 639 Illustrations, Royal 4to, Cloth, 25s.

MINING AND ORE DRESSING MACHINERY.

By C. G. WARNFORD LOCK, Author of "Practical Gold Mining."

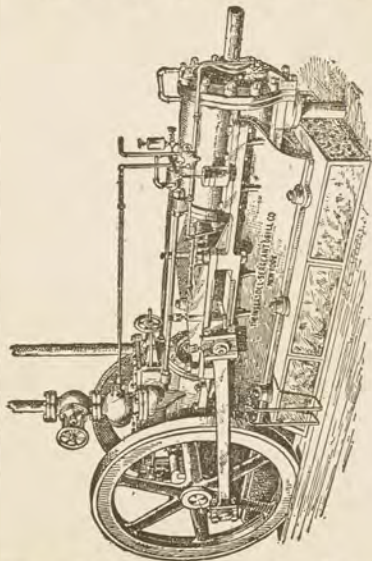
London: E. & F. N. SPON Ltd., 125 Strand.

ROCK DRILLS & AIR COMPRESSORS.

HAND ROCK DRILLS, ELECTRIC
BATTERIES, FUSES, &c.



Telegrams: "ENYAM LONDON."



DIAMOND PROSPECTING DRILLS,
BORING TOOLS, &c.

THE INGERSOLL-SERGEANT DRILL CO.

114a QUEEN VICTORIA STREET, LONDON E.C.

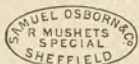
(A. E. W. GWYN, Agent.)

SAMUEL OSBORN & CO.,

CLYDE STEEL WORKS, SHEFFIELD.

London Office—32 QUEEN VICTORIA STREET, E.C.

REGISTERED CORPORATE AND TRADE MARKS.



R. MUSHET'S TITANIC STEEL | TITANIC STEEL

Sole Makers of R. MUSHET'S SPECIAL STEEL—

THE CELEBRATED

HAND & HEART

STEEL FOR MINING PURPOSES.

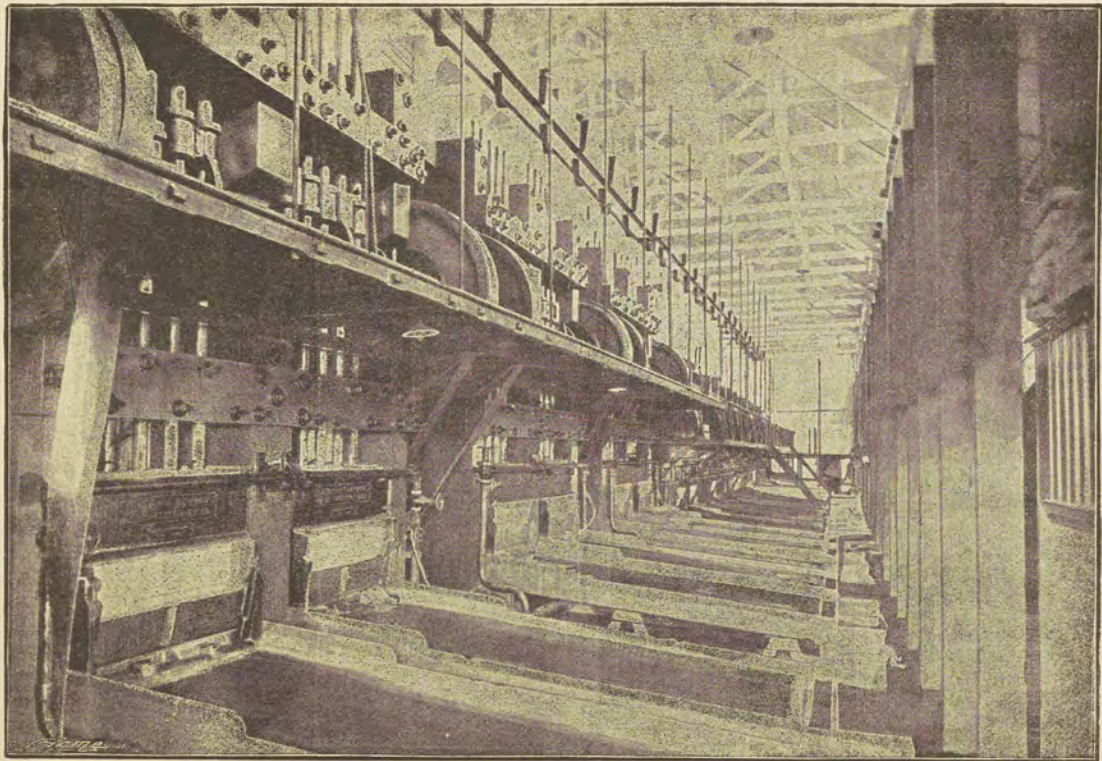
R. Mushet's Extra Best Welding Titanic Borer Steel ...	<i>Blue Label.</i>
R. Mushet's Best Titanic Borer Steel	<i>White Label.</i>
Best Warranted Cast Steel for Miner's Drills	<i>Pink Label.</i>
Warranted Cast Steel for Miner's Drills... ..	<i>Green Label.</i>
R. Mushet's Titanic Borer Steel	<i>Red Label.</i>

Trolley Wheels and Axles, Rollers, Sheaves, Head Gear Pulleys,
and Steel Castings of every Description.

BEST CAST STEEL FOR LATHE AND PLANING TOOLS,
FORGINGS. HAMMERS. SAWS.

Best Refined Crucible Cast Steel Files.

GOLD STAMP BATTERY at the MAY CONSOLIDATED MINE, JOHANNESBURG.



Manufactured by THE SANDYCROFT FOUNDRY & ENGINE WORKS Co. Ltd. near CHESTER.

CHARLETON'S REPORT-BOOK FOR MINING ENGINEERS.

By A. G. CHARLETON, M.E. (*Consulting Engineer*).

Price 7s. 6d.

Publishers: WHITEHEAD, MORRIS & CO., 9 FENCHURCH STREET, E.C.

PRESS NOTICES.

MINING JOURNAL, October 21st 1896.

(*Extract.*)

"Nothing that could possibly make the book more useful appears to have been neglected. . . . It will become a prime favourite among mining engineers."

FINANCIAL NEWS, January 15th 1897.

"If all mining reports were modelled on the plan laid down here, shareholders would have every tittle of information vouchsafed before they invested in a property, and would be able to judge—as they are hardly at present able to do in the majority of instances—of the desirability or otherwise of making the investment suggested. This is a volume which has an interest for speculators as well as for mining engineers. It affords plain indication of points which engineers should meet and deal with, and if these points are not handled in reports, people with money to spare are placed in a position in which they can ask themselves why they are shirked."

CHARLETON'S COST-SHEET FORMS

(REGISTERED).

PUBLISHERS: HOWARD & JONES, 27 BURY STREET, LONDON, E.C.

Order Refer-
ence No.

1. Monthly Statement (Cash-book & Ledger).
2. Bill Headings.
3. Pay Roll.
4. " Vouchers.
5. Stores Book.
6. " Delivery-book.
7. " Dockets.
8. Labour Dockets.

Order Refer-
ence No.

9. Stores Account Forms—(a) Mine; (b) Mill; (c) General and Capital.
10. Working Expenditure and Revenue (*Monthly Statement*).
11. Assay Forms.
12. Bullion Returns.
13. Mine-working Statement, A.
14. " " B.
15. Stores Ledger.

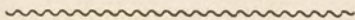
The use of these Forms is described in a "Paper" read before the Institution of Mining and Metallurgy (*Transactions*, 1897), and sample sets of Forms, published by Messrs. HOWARD & JONES, can be obtained, price 3/6.

In ordering, specify if loose sheets are required, or if they are to be bound in book form, and the numbers of each wanted.

G. T. HOLLOWAY,
57, CHANCERY LANE, W.C.

A
GLOSSARY OF MINING TERMS.

With Illustrations and Geological Survey Map Signs.

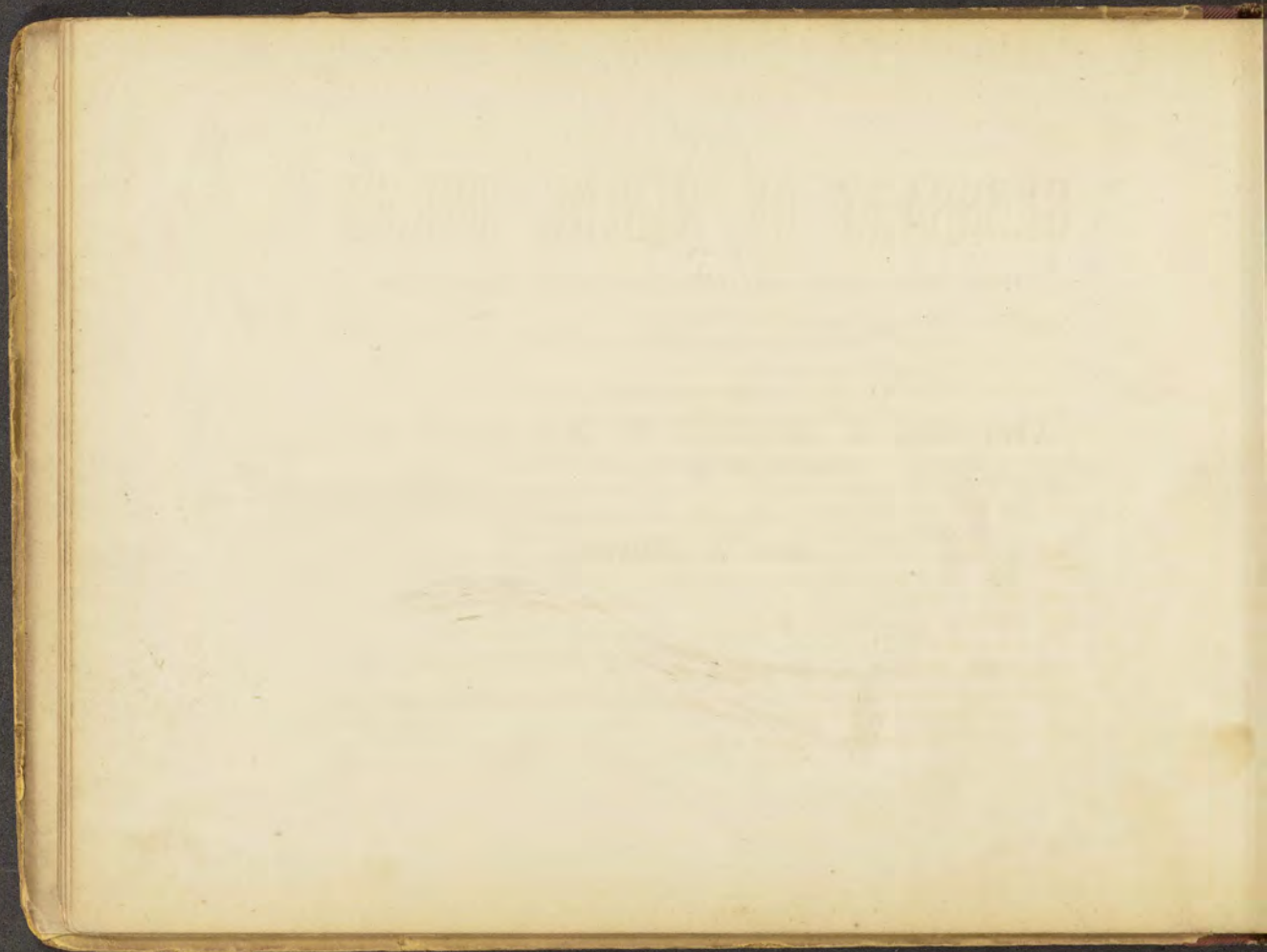


COMPILED BY
CAPTAIN C. C. LONGRIDGE, M.F.I.M.E., M.I.M.E., &C.,
Consulting & Mining Engineer.

HALF - A - CROWN.

LONDON: "THE MINING JOURNAL" OFFICES,
18, FINCH LANE; AND 3, DORSET BUILDINGS, E.C.

1897.



A

- ABATTIS (Leicester)—cross packing of branches or rough wood to keep roads open for ventilation
- ACCOMPT (Cornwall)—settling day or place
- ACREAGE RENT (England)—royalty or rent for working minerals
- ADIT—a horizontal entrance to a mine driven from the side of a hill
- ADLINGS (Northern England)—earnings
- ADOBE (Spanish)—Sun-dried clay brick
- ADVENTURERS—original prospectors, shareholders or partners in a mine
- AFTER DAMP—poisonous or irrespirable gas resulting from explosions of fire-damp, chiefly carbonic acid gas and nitrogen
- AGITATOR—settler, or an apparatus for catching such amalgam as may not have been caught in the pans and settlers
- AIR BOX—wooden tubes 9 to 15 feet long, for ventilating headings or sinkings
- AIR COURSE—ventilation channels
- AIR CROSSING—a bridge carrying one air-course across another
- AIR DOOR—a door for regulating air currents
- AIR END WAY—ventilation levels running parallel with the main level or gate road, and connected with it at intervals
- AIR GATE (Midlands)—ventilation ways

- AIR HEAD (Staffordshire)—*see* AIR GATE
- AIRLESS END—unventilated extremity of a stall in long-wall workings
- AIR LEVEL—an old level used for ventilating
- AIR SHAFT—a shaft sunk for ventilation purposes
- AIR SLIT (Yorkshire)—a short head between other air-heads
- AIR SOLLAR—an air-tight wood flooring in a level to allow the drainage to flow out, and cool air to pass in
- AIR STACK—ventilating chimney over a shaft
- ALBERTI FURNACE—a continuous reverberatory for mercury ores
- ALCAM (Wales)—tin
- ALIVE (Cornwall)—productive
- ALKALIS—potash, soda, and also ammonia and lithia. Alkalies turn vegetable blue, green, and vegetable yellow, reddish brown. Blues reddened by an acid are restored by an alkali. Alkalies neutralise acids, and with them form salts. They precipitate hydrates from their salts.
- ALLOY—commonly understood as a mixture of metals by fusion
- ALLUVIAL DEPOSIT—a deposit formed of matter washed down or otherwise transported by a natural agency from higher ground
- ALLUVIUM—*see* ALLUVIAL DEPOSIT
- ALUMINOUS—containing alumina
- AMALGAM—an alloy of mercury with another metal, usually gold or silver
- AMALGAMATION—the process of uniting mercury with gold or silver in an ore
- AMORPHOUS—without any crystalline or definite form
- AMURANG (Ceylon)—gold ore

- AMYGDALOIDAL—almond shaped
- ANEMOMETER—instrument for measuring the velocity of wind or air currents
- ANHYDROUS—without water in its composition
- ANTHRACITE—hard, very pure coal
- ANTICLINAL—when rocks are bent over in the form of a saddle or arch (Fig. 1, A)
- APEX (American)—end or edge of vein nearest surface
- APRONS (America)—copper plates next the battery mortar—stone or timber facings to a dam
- AQUAFORTIS—name formerly applied to nitric acid
- AQUA REGIA—a mixture of nitric and muriatic (hydrochloric) acid. One volume of strong nitric to three or four of hydrochloric acid is a good mixture
- ARBORESCENT—of a tree-like form
- ARCH (Cornwall)—portion of lode left standing to support hanging wall, or because too poor to remove; the roof of a reverberatory furnace
- ARENACEOUS—sandy
- ARENG (Borneo)—auriferous pay-dirt
- ARGENTIFEROUS—silver-bearing
- ARGILLACEOUS—clayey
- ARIAN (Wales)—silver
- ARM—the inclined leg of a set of timber
- ARRASTRA—an appliance used for grinding ore. The ore placed on a circular trough is crushed by means of revolving mill-stones
- ARROBA (Spanish)—25 lbs.
- ARSENIDE—compound of a metal with arsenic

ASBESTOS—the usual mineral of this name is fibrous, and of a white, blue, or dull greenish colour, with pearly lustre

ASSAY—process for determining the amount of pure metal in an ore or alloy

ASSAY TON—a weight of 29.166 $\frac{2}{3}$ grms. As 1 ton of 2,000 lbs. av. contains 29.166 $\frac{2}{3}$ ozs. troy, every milligram of gold or silver obtained from 1 assay ton of ore represents 1 oz. troy per ton of 2,000 lbs.

ASSESSMENT WORK (Western America)—the annual work necessary to hold a claim

ASTEL—overhead boarding in a gallery

ASTYLLEN (Cornwall)—small dam in an adit to stop water; partition between ore and deads on grass

ATTLE or A'TTAL (Cornwall)—refuse rock or waste

AUGET—priming tube

AUR (Wales)—gold

AURIFEROUS—gold-bearing

AVERAGE PRODUCE (Cornwall)—percentage or quantity of fine or pure copper in one hundred parts of ore

AVERAGE STANDARD (Cornwall)—price of pure copper in ore per ton

AXE STONE—a species of jade. It is a silicate of magnesia and alumina.

(7)

B

- BABY—a sifting machine for diamantiferous gravel
- BACK (Cornwall)—lode lying between an adit, drift or stop e and the surface or the next working above
- BACK CASING—temporary shaft-lining of dry-laid bricks supported at intervals on curbs
- BACK END (Northern England)—the last portion of a judd remaining after the sump has been removed
- BACKING—timbers let into notches in the rock across the top of a level; the rough masonry faced with finer work; earth behind a retaining wall
- BACKING DEALS (Northern England)—vertical planks behind the curbs in a shaft
- BACK SHIFT—afternoon shift of miners
- BAHAR (Malay)—weight of 4 cwts.
- BAIT (North of England)—provisions of the pitmen
- BAL (Cornwall)—a mine
- BALANCE BOB—a heavy counterpoise to pump rods
- BALK (Northern England)—a hitch causing a nip
- BALLAND (Derbyshire)—pulverulent lead ore
- BAND (Northern England)—stone interstratified with coal

- BANDDOON—a peculiarly marked pebble, streaked with parallel rings, often indicates the presence of diamonds
- BANK—surface at pit's mouth; deposit worked by surface excavations or drifts above water level; face of coal where runners are working
- BANK CLAIM—a mining claim on the bank of a stream
- BANKET (South Africa)—a gold-bearing conglomerate in which are quartz pebbles
- BANK RIGHT (Australia)—right to divert water to bank claim
- BAR—a course of rock, of a different nature to the vein stone, which runs across a lode; a hard ridge of rock or sandbank crossing a stream is called a bar in Australia, on the upper side of which gold is likely to be deposited; a drill or tamping rod
- BAR DIGGINGS (Western America)—auriferous claims on shallow streams located on "bars," and worked, when the water is low, or by coffer-dams
- BARGAIN—portion of mine worked by a gang on contract
- BARMASTER (Derbyshire)—mine official who collects the dues, &c., and pre-ides over the Barmote
- BARMOTE (Derbyshire)—mining court
- BARREL QUARTZ—crumpled bed of quartz (Fig. 2)
- BARRIER-PILLARS—pillars of coal, larger than ordinary, left as supports when the ground comes to be robbed
- BARROWS—dumps or heaps of waste stuff raised from the mine
- BASE METALS—metals other than gold, silver, mercury, and the platinum group
- BASIN—a trough-like depression of strata in the earth's crust (synclinal)
- BASS (Derbyshire)—indurated clay (also called batt, bind, or bond). Shaly coal
- BASSET—outcrop of a lode or stratum

- BATCH (Corn)—the amount of ore sent to the surface by a pare or gang of men.
An assorted parcel of tin
- BATEA—a small slightly conical dish, generally about 20 inches in diameter, and 2½ inches deep, in which gold-bearing soil is washed
- BATT—*see* BASS
- BATTER—the front slope of a face of masonry
- BATTERY—sets of stamps, usually five
- BEACH-COMBING—working the sands on a beach for gold, &c.
- BEARING—*see* STRIKE
- BEATAWAY—to work hard ground by means of wedges and sledge hammers
- BEANS (Northern England)—small coals. The productive portions of a tin stream
- BEAN SHOT—copper granulated by pouring into hot water
- BEAT DOWN (Cornwall)—to cut away a lode
- BED—a stratum, layer, or deposit that is a member of a series of stratified rocks; the layer above is called the roof, that below is the floor; the thickness is the distance from roof to floor, measured at right angles to the plane of stratification.
- BED CLAIM (Australia)—a mining claim on bed of stream
- BED ROCK—the rock underlying an alluvial deposit, and on which at a gold digging; the most payable “dirt” usually rests
- BED-VEIN—a bedded lode parallel with the stratification of the enclosing rock (Fig. 3)
- BELLY—a swelling mass of ore in a lode
- BEN (Cornwall)—productive
- BENCH (Australia)—a terrace on the side of a river. Auriferous benches are termed reef wash. Divisions in a coal seam separated by clay, &c. To cut coal in layers or benches

- BENCHING UP (Northern England)—working on top of coal
BEND (Derbyshire)—indurated clay
BENHEGL (Cornwall)—flowing tin stream
BETING (Malay)—quartz matrix carrying gold
BIND (Derbyshire)—indurated clay
BING (Northern England)—8 cwts. of ore
BING HOLE (Derbyshire)—an ore shoot
BING ORE (Derbyshire)—first class lead ore in lumps
BING TAIL (Northern England)—ore given to the miner for his labour as tribute
BLACK AMBER—jet
BLACK BAND—an earthy carbonate of iron, containing much bituminous matter
BLACK CHALK—a variety of clay containing carbon
BLACK COPPER—impure smelted copper
BLACK DAMP—carbonic acid gas
BLACK ENDS—refuse coke from coke ovens
BLACK FLUX—charcoal and potassium carbonate
BLACK JACK—zinc blende of a dark variety
BLACK LEAD—graphite
BLACK SAND (Australia)—name given to magnetite and titaniferous iron and other minerals accompanying gold
BLACKSTONES—*see* under TOADSTONES
BLACK TIN—tin ore ready dressed for smelting
BLANCH—lead ore mixed with other minerals ; a piece of ore found isolated in hard rock

- BLANCHED COPPER—copper alloyed with arsenic
- BLANKET STRAKE (Australia)—sloping tables or sluices lined with baize or blanketing for catching gold
- BLLENDE—sulphide of zinc
- BLIND CREEK—a creek, dry, except during wet weather, or after a freshet.
- BLIND LODE—one that does not show surface croppings
- BLIND LEVEL—a level unconnected with other workings; a drainage level with shaft at each end, acting as an inverted syphon
- BLIND SHAFT—a shaft not coming to the surface; *see* WINZE
- BLOCK TIN—cast tin
- BLOCK CLAIM (Australia)—a claim pegged out on the dip of a reef beyond the sides of the surface claims in which the vein outcrops
- BLOCK REEF'S (Australia)—those with frequent longitudinal contractions
- BLOCKING OUT (Australia)—washing gold-bearing matter in square blocks; working deep leads in blocks; preparing a vein for stoping
- BLOOMARY—a forge for making wrought iron direct from the ore
- BLOSSOM—the decomposed outcrop of a vein or coal-bed
- BLOSSOM ROCK—coloured vein stone detached from an outcrop
- BLOW—a large increase in the size of a lode; a mass of quartz or ironstone not connected with a lode
- BLOWER (Northern England)—an outrush of gas; a machine for forcing air into a mine or furnace
- BLUE GRAVELS—name given to a series of auriferous gravels in Western America
see BLUE LEAD

- BLUE GROUND (S. Africa)—a diamantiferous, hard, dark greenish-blue cement, found in crater-like deposits below the zone of surface oxidation
- BLUE LEAD—a blue-stained stratum of gravel and cement found in the ancient river beds of California
- BLUE PEACH (Cornwall)—a slate-blue fine-grained schorl
- BLUE STONE—copper sulphate
- BLUE ELVAN—greenstone
- BLUE JOHN—fluor spar
- BLUFF—a high bank or hill with precipitous front
- BOARD or BORD—the excavations in pillar-and-stall work
- BOG IRON ORE—loose earthy brown hematite recently formed in swampy ground
- BOKE—a small pipe of ore connecting lodes
- BONANZA—a large and rich body of ore
- BONE—slaty matter in coal seams
- BONGKAL (Straits Settlements)—a gold weight, equal to 832.84 grains 20 bongkals, equal to 1 catty
- BONNET—the roof of a cage
- BONNEY (Cornwall)—an isolated body of ore
- BONZE—undressed lead ore
- BOOMING—removing gravel by sudden outlets of pent-up water
- BOOSE—part of a vein containing round lead-ore
- BORNASCA—an unproductive mine
- BORD & PILLAR—*see* PILLAR & STALL—a bord, board, bord-gate or brow is any gallery driven across the “face” of coal or ore
- BORT—cypique dark diamond

- BOTRYOIDAL**—with surface of rounded prominences, grape-like bunches
- BOTTOM**—bed rock
- BOTTOMS**—impure copper or alloy formed below the matte in smelting; the deepest workings
- BOULDER CLAY**—stiff clay forming glacial drift
- BOULDERS**—loose rounded masses of stone detached from the parent rock
- BOUNCE**—to work a drill by causing it to rise and drop
- BOUNDS** (Cornwall)—a tract of tin ground
- BOUT** (Derbyshire)—24 dishes of lead ore (a long bout), or 12 dishes (a short bout).
- BOWKE** (Staffordshire)—small wooden box for hauling ironstone underground
- BOWSE** or **BOUZE** (Derbyshire)—lead ore as cut from the lode
- BRACE** (Cornwall)—mouth of a shaft; the landing platform at the head of an incline shaft; inclined bar or strut acting as stay
- BRAIZE** (America)—charcoal dust
- BRANCES**—iron pyrites in coal
- BRANCH**—small string of ore in connexion with the main lode
- BRASSES**—iron pyrites in coal
- BRAKE SIEVE**—hand jigger
- BRAT**—a thin bed of coal mixed with pyrites or limestone
- BRATTICE**—a lining or partition of plank, cloth, or brick, to aid ventilation in a shaft, level, or gangway
- BRAZIL** (Northern England)—iron pyrites in coal
- BREAST**—the face or standing end of rock or lode immediately in front in a working; timber across a drive behind the main timber.

- BRECCIA—a rock in which angular fragments are cemented together
BRECCIATED LODES—veins made up of broken materials
BREEZE—small coke
BRETTIS (Derbyshire)—a timber crib filled with slack
BROB—a spike to prevent timber slipping
BROIL or BROYL (Cornwall)—traces of a vein in loose matter
BROOCH (Cornwall)—mixed ores
BROOD (Cornwall)—heavy waste from tin and copper ores; Mundic or Black Jack
BROWN COAL—lignite
BROWNSPAR—a kind of dolomite, containing, in addition to the carbonates of lime and magnesia, some carbonate of iron
BROWNSTONE (Australia)—decomposed iron-stone outcrop
BROWSE—imperfectly smelted ore, mixed with cinder and clay
BRYLE (Cornwall)—*see* BROIL
BUCKING—breaking down ore with a very broad hammer ready for sorting
BUCKSTONE—rock not producing gold
BUDDLE—an inclined stationary or revolving, shallow cone-shaped table, on which ores are dressed
BUHRSTONE—quartz containing cellulose
BULKHEAD—a water-tight partition or stopping in a level or shaft; the end of a flume carrying water for hydraulicizing
BULLDOG—furnace lining of iron oxide
BUNCH—a small, rich deposit of ore of irregular shape

BUNCHY LODES—lodes in which bunches occur, the latter sometimes having a tendency to arrange themselves in accordance with the dip or cleavage of the surrounding rocks

BUNDING—a staging in a level for carrying débris resting on the stulls

BUTTON—name given to the globule of metal which remains in the cupel after fusion. Also applied to the globules of a metal left in the slag from fusion or scorification

BUNNEY—a nest of ore not lying in a regular vein

BURDEN—earth over-lying a bed of useful mineral; the tops or heads of stream-work above the stream-tin; the ore and flux in a blast furnace charge

BURR—solid rock

BURROW—refuse heap

BUTT—coal surface exposed at right angles to the face

BUTTY (Midlands)—a contract miner working at so much per ton

BYON—ruby-bearing earth in Burmah

(17)

B

C

CAB—parts of a lode near the walls, partly detached from them, and likely to slip off

CACO (Brazil)—a white quartz

CAGE—the iron vehicle used to convey men, &c., up and down a shaft; the hollow drum of a horse whim, round which the rope is wound

CAGE-SEAT—scaffolding sometimes filled with springs, to take off the shock upon this the cage drops when reaching the mine bottom

CAGE-SHEETS—short props or catches on which cages stand during caging or changing tubs.

CAIRNGORM—a variety of transparent coloured quartz, frequently used as an ornament

CAJON (Bolivio) = 50 quintals (1 quintal = 100 lbs.)

„ (Peru) = 60 „

„ (Chili) = 64 „

[One marco of gold per cajon of ore = 2 oz. 14 dwt. per ton.]

CAKE—agglomeration, as when ore sinters together in roasting; retorted amalgam

CAL (Corn)—wolfram

CALCINE—to drive of volatile matter by exposing the substance to a gentle heat, &c.

- CALCITE—crystallised carbonate of lime
CALICHE (Chili)—saltpetre deposit
CALIFORNIAN PUMP—a pump made of a wooden box through which circulates an endless belt with floats ; used for pumping from shallow ground
CALLUM (Australia)—native term for auriferous quartz
CALLYS (Corn)—stratified rocks traversed by lodes
CAM—an arm attached to the revolving shafts for raising stamps ; carbonate of lime or fluorspar, found upon the joints of lodes
CAMBRIAN—name given to the oldest (except the Archean) of the stratified rocks. Found in Wales
CAMPAIGN—length of time a furnace remains in blast
CANCH—part of a bed of stone worked in quarrying
CAND (Cornwall)—fluorspar
CANGRA (Brazil)—a kind of auriferous conglomerate
CANK (Derbyshire)—whinstone
CANKER—the ochreous sediment in coal pit waters ; being bicarbonate of lime, precipitated by the action of air upon that mineral
CANNY—lode containing beds of carbonate of lime and fluorspar is called canny
CAÑON—a deep gorge
CANTS—the pieces forming the ends of buckets in a water wheel
CAP—the upper portion of a lode ; a piece of wood placed on props or legs in a drive
CAP ROCK—the formation above the ore ; the rock that covers the older bed rock
CAPLE or CAPEL (Cornwall)—quartz, schorl and hornblende ; also indication of manganese lodes

- CARAT—weight, of $3\frac{1}{8}$ Troy grains, used for diamonds and precious stones. With goldsmiths and assayers the term carat is applied to the proportions of gold in an alloy; 24 carats represent fine gold. Thus, 18-carat gold signifies that 18 out of 24 parts are pure gold, the rest some other metal
- CARBONA—a rich bunch of ore in the country rock connected with the lode by a mere thread of mineral; an irregular deposit of the ore
- CARBONATE—compound formed by union of carbonic acid with a base
- CARBONACEOUS—containing carbon, generally as coal
- CARBONADO—bort or black diamond
- CARBONIFEROUS—geological term for a series of rocks associated with coal measures
- CARBURET—a compound of a metal with carbon
- CARGA (Spain)—a mule's load = 300 lbs.
- CARRACK—*see* CAPEL or CAPLE
- CASCAHLO (Brazil)—a kind of gravel, auriferous and diamondiferous
- CASCAJO (South America)—a decomposed schist on which pay-dirt lies
- CASE—a fissure admitting water into a mine
- CASING—material between a reef and its walls; a timber partition dividing a shaft into compartments; the lining of a shaft
- CATCH-PIT—a reservoir for saving tailings
- CATEAR (Spain)—to search for minerals
- CAUF (North England)—a coal bucket or basket
- CAUNTER-LODE—a lode which inclines at a considerable angle with the direction of the other lodes in the vicinity

- CAWK—barium sulphate; a variety of heavy spar
CELLULAR—containing cavities
CEMENT—a gravel the particles of which are cemented together
CEMENTATION—the process of converting wrought iron into steel by heating it
in contact with charcoal
CERRO (Spain)—rocky hill
CHAIN—a measure of 66 feet long divided into 100 links
CHALDRON (North England)—53 cwt. or 36 bushels
CHAMPION LODGE—main lode
CHAPEAU DE FER—French term for “Gossan”
CHARGE—the material fed into a furnace at one time; amount of powder used
for blasting
CHATS (North England)—small pieces of stone with ore
CHECK—*see* FAULT
CHEEKS—walls of a vein
CHERT—a mineral like flint, but of coarser texture and more brittle. Contains
lime in addition to silica
CHILIAN MILL—an improved arrastre, with a stone wheel rolled round the bed
CHILI BARS—bars of impure copper weighing about 200 lbs., imported from Chili
and corresponding to the Welsh blister copper containing 98 % copper
CHIMNEY—an ore-shoot
CHINESE PUMP—like the Californian, but made entirely of wood
CHOKEDAMP—carbonic acid gas
CHLORIDE—compound of chlorine with another element

- CHURN-DRILL—a long iron bar with a cutting end of steel used in quarrying, and worked by raising it and letting it fall, usually termed a Jumper
- CHUTE—*see* SHOOT
- CLAIM—land staked off by the prospector as his mining property
- CLACK—a common pump-valve
- CLAGGY (N. England)—when coal is tightly joined to the roof
- CLAVO (Mexico)—a rich “pay” chimney limited horizontally
- CLAY COURSE—a clay seam found at the sides of some veins
- CLAY-SLATE—name given to argillaceous stratified rocks which cleave across the planes of stratification
- CLEAN-UP—to collect all the particles of quicksilver and amalgam about a battery after crushing
- CLEAVAGE—the property some rocks possess of splitting into layers or laminae
- CLEAT—a joint in a rock ; a wedge
- CLOD—soft shale or slate forming a bad roof
- COARSE LODE—one not rich
- COARSE METAL—in the smelting of copper, the matte containing the copper, &c., concentrated in it after the first smelting
- COAL-PIPES (North England)—very thin irregular layers of coal
- COB (Cornwall)—to break up by hand-hammer ore for sorting
- COBRE—Cuban copper ore
- COCKADE ORES—*see* RING ORES
- COCKLE (Cornwall)—black tourmaline, often mistaken for tin. Also termed Schorl
- COD (North England)—the bearing of an axle

- COFER (Derbyshire)—to caulk a shaft by ramming clay behind the lining
- COFFER—the iron mortar box in which stamps work
- COFFER DAM—an inclosure built in the water and then pumped dry, so as to permit work to be carried on inside of it
- COFFIN (Cornwall)—an old open-working
- COIL DRAG—a tool for picking pebbles, &c., from drill holes
- COLOUR—(to show) an Australian expression when rock or gravel shows traces of gold
- COLORADOS (South America)—red ores (stained by oxide of iron), similar to "gossan." Called also Pacos
- COLOURS—particles of gold found in panning a sample
- COL-RAKE—a shovel for stirring lead ores while washing
- COMPACT—of a firm texture
- COMBY LODES—ribbon-like structure of some lodes containing drusy cavities; plates or combs of crystalline mineral, the separate crystals being arranged with their longer axes at right angles to the lodes
- CONCENTRIC—having the same centre
- CONCHOIDAL—name given to a certain kind of hollow fracture
- CONCRETION—a cemented aggregation of one or more kinds of materials around a nucleus
- CONDUIT—a covered waterway
- CONFORMABLE—strata are conformable when they lie one over the other with the same dip
- CONGLOMERATE—rounded stones cemented together to form a rock
- CONTACT LODE—one lying between two distinct kinds of rock (Fig. 4)

- CONTOUR—the line that bounds the configuration of ground, &c.
 CONTOUR RACE—a watercourse following the contour of the land
 COPE (Derbyshire)—lead mining on contract by the dish or other measure
 COPPER REGULUS (or MATTE)—sulphides of copper and iron, usually containing sulphides of nickel, cobalt and lead, &c., as impurities
 CORBOND—an irregular mass or dropper from a lode
 CORD—a pile of wood 8 feet \times 4 \times 4 feet = 128 cubic feet
 CORE—the working shift of a Cornish miner
 CORF—*see* CORVE
 CORVE—a mining waggon or tub
 COST-BOOK SYSTEM (Cornwall)—a system by which the shares are subject to unlimited calls and forfeiture in case of non-payment
 COSTEAN (Cornwall)—to prospect a lode by sinking pits on its supposed course, trenching for a lode
 COSTEAN PITS—trenches cut at right angles to the strike of the lode
 COUNTRY—the geological formation traversed by a lode
 COUNTRY ROCK—the rock on either side of the lode
 COURSE OF A LODE—its direction
 COW—a self-acting brake for incline-planes
 COYOTING (West America)—irregular mining by burrowing
 CRAB—a kind of windlass or capstan worked by winch or hand-pikes
 CRAB-HOLE (Australia)—water-worn holes in bed rock of alluvials
 CRADLE (Australia)—a wooden box with a sieve mounted on rockers for washing gold dirt

- CRAMP—a pillar left for support in a mine; angle irons in Cornish stamp batteries
- CRANCH—part of a vein left by previous workers
- CREADERO (South America)—indication of gold
- CREAZE (Cornwall)—the tin ore collected in the middle of the buddle
- CREEP—the gradual movement of walls or floors of a mine, caused by the vertical and lateral pressure of the rocks
- CREEK—a stream, usually navigable for small boats
- CRETACEOUS—chalky; usually applied to fossiliferous limestone
- CREVICING—collecting gold in the crevices of rocks
- CRIB—a timber or iron frame upon which tubbing or the brick lining of a shaft is built; miner's dinner
- CRIBBLE—a sieve
- CROP (Cornwall)—the richest portion of dressed tin ore
- CROPPINGS—parts of the vein above the surface
- CROSS-COURSES—veins which usually cross the main lode at right angles
- CROSS-CUT—a tunnel or level driven across the regular lode, or workings of a district; if for ventilation, it is usually termed cross-heading
- CROSS SPUR—a vein of quartz that crosses the reef
- CROSSES & HOLES (Derbyshire)—a hole made in the ground by the discoverer of a lode to temporarily secure possession
- CROW-FOOT—a tool for drawing broken boring rods
- CRUCIBLES—fire-proof vessels used in the roasting and melting of ores, &c.
- CRYSTALLIZED—having well defined crystals

CUBICAL—of the shape of a cube

CULM (England)—inferior anthracite ; (North America) fine waste coal and dirt of smokeless coal

CUPOLA (Corn-Cupelo)—a small furnace

CURB—a timber frame in a shaft to make a foundation for walling or tubbing

CUT—to intersect the lode, usually at right angles ; to excavate in the side of a hill

CUTTING-DOWN—to cut down a shaft is to increase its size

D

DAM—a barrier for water, air or gases

DAMP—dangerous gas (light carburetted hydrogen, carbon dioxide, &c.) escaping from the mineral formation in a mine; fire damp, choke damp, ground damp, &c.

DAN (North England)—a truck without wheels

DANT (North England)—soft inferior coal

DATUM LEVEL—the level at which a survey commences

DEAD—unproductive; unventilated

DEAD MEN'S GRAVES (Australia)—grave-like mounds in the basalt underlying auriferous gravels

DEAD RICHES (North America)—lead carrying much bullion

DEAD ROASTING—roasting till all sulphur is driven off

DEAD WORK—unproductive work

DEADS—ore that will not pay for working; waste or rubbish in a mine; broken down payable ore in the stopes

DEAN (Cornwall)—the end of a level

DEBRIS—disintegrated rock deposit

DECANT—to pour off liquid (from the sediment) out of one vessel to another

- DECREPITATE—to crackle and fly to pieces when heated.
 DELTA—the alluvial land at the mouth of a river : usually bounded by two branches of the river, so as to be of more or less triangular form
 DENUDATION—laying bare rocks by water or other agency
 DEOXIDATION—the removal of oxygen
 DEPOSIT—matter laid or thrown down, or precipitated from solution : for instance, mud, sand, ashes, ore, &c.
 DESSICCATION—the act of drying
 DESUE (Cornwall)—to cut away the ground beside a thin vein so as to remove the latter whole
 DETRITAL—*see* DEBRIS
 DEVELOPMENT—work done in opening up a mine
 DEVILS DICE—cubic iron pyrites changed to black iron
 DIAGONAL—from one corner to another opposite
 DIALLING—surveying a mine by means of a dial
 DIE—the block in a battery mortar, on which the shoe strikes
 DIG (Cornwall)—a gouge or layer of soft material on the wall of a ban
 DILLUING (Cornwall)—dressing tin slimes in a fine sieve
 DILUVIUM—drift deposit
 DIORITE—crystalline, whitish, speckled black, or greenish black rock ; chiefly consisting of felspar and hornblende, often with accessory minerals
 DIP—the angle which the lode or bed makes with the horizontal is called the dip
 DIPPA (Cornwall)—a small catch-water pit
 DIPPING-NEEDLE—a compass with the needle swinging in a vertical plane

- DISH (Cornwall)—an ore measure : in lead mines a trough 28 in. long, 4 in. deep, and 6 in. broad ; sometimes 1 gal. $\frac{1}{4}$ ths pints
- DISSEMINATED—scattered throughout a rock in the form of small fragments
- DISTILLATION—the driving off vapours from a substance, and allowing them to condense on another surface or vessel
- DIVIDER—*see* under LEADER
- DISSUE (Cornwall)—*see* DESUE
- DOGGERS—nodules of ironstone
- DOLERITE—a kind of basaltic rock
- DOLES—small piles of assorted or concentrated ore
- DOLLY TUB (Australia)—a tub used in washing gold ore being agitated by a “dolly” or perforated board ; a machine for crushing, being a rough pestle and mortar, the former being attached to a spring pole by a rope (Fig. 5) ; pestle and mortar
- DOLOMITE—a mineral composed of the carbonates of lime and magnesia ; magnesian limestone
- DONK (North England)—soft mineral found in cross veins
- DRADGE (Cornwall)—inferior ore separated from the prill ; pulverized refuse
- DRAG—resistance to the passage of an air current
- DRAFTAGE—a deduction from the gross weight of ore when transported to allow for loss
- DRAW A CHARGE—to take a charge from the furnace ; to withdraw the blasting charge after a misfire
- DRESSER (Staffordshire) - a large coal pick ; cleaner of ore
- DRESSING—preparing ore for metallurgical operation

- DRESSING FLOORS—the floors where ores are dressed
- DRIFT—a loose alluvial deposit ; a horizontal passage in a mine : a drift follows the vein, a cross-cut intersects it, a level or gallery may do either
- DRIFTING—winning pay dirt from the ground by means of drives
- DRIVE or DRIVINGS—horizontal tunnels or passages in a mine
- DROPPER—a branch leaving the vein on the footwall side ; a feeder
- DRUGGON (Staffordshire)—a vessel for carrying fresh water into a mine
- DRUSE—a hollow space in veins lined with crystals
- DRYBONE—a term used in America for Calamine (carbonate of zinc)
- DRY ORE—argentiferous ores that do not contain enough lead for smelting purposes
- DUCK MACHINE—an arrangement of boxes, one working within the other, for forcing air into mines
- DUCTILE—that can be drawn out into wire or threads
- DUMB'D—choked (of a sieve or grating)
- DUMP—the place where ore taken from a mine is deposited ; the pile of mullock
- DUNES—small hills formed by sand blown together by the wind
- DURN (Cornwall)—a timber frame
- DUTY—number of lbs. of water raised one foot high by a bushel of coal ; Government tax on mineral raised
- DUST GOLD—pieces under 2—3 grains
- DYKE—intruded igneous rock which fills up fissures and rents in stratified rocks
- DZHU (Cornwall)—*see* DESUE

(31)

E

- EARTHY COAL—name sometimes applied to lignite or brown coal
- EFFLORESCENCE—an incrustation of powder or threads, due to the loss of the water of crystallisation
- EISENER HUT—German miners term for Gossan
- ELBOW—a sharp bend, as in a lode or pipe
- ELECTROLYSIS—separating chemical compounds into their component parts by means of electricity
- ELVANS—a Cornish name applied to most dyke rocks of that country; now mostly restricted to quartz porphyries
- EMERY—compact form of corundum; is hard enough to scratch quartz and several gems
- END OF COAL—the butt, direction or section at right angles to the face
- EPACTIC—used of such deposits as, in a geological sense, were introduced subsequently into the surrounding rock
- EROSION—the wearing away of rocks
- ESCARPMENT—a nearly vertical natural face of a rock or ground
- EVAPORATE—to cause to become a vapour
- EXEMPTED CLAIM (Australia)—a mine allowed to remain some time unworked

EXPLOITATION—the productive working of a mine

EYE—rich ore chutes. The eye of a shaft is the top ; the opening at the end of a tuyere ; the hole in a pick or hammer head that receives the handle

F

- FACE—the extreme end of tunnel or other mining excavation ; the face of coal is the chief cleavage-plane at right angles to the stratification
- FAHLBANDS—belts or zones of crystalline rocks of great length and breadth impregnated with finely-divided metallic sulphides
- FALSE BEDDING—where the rock laminæ, though for a short distance parallel to one another, are oblique to the general stratification of the mass. Irregular lamination
- FALSE-BOTTOM—in alluvial mining the term is applied to a stratum on which pay dirt lies but underneath which are other bottoms
- FALSE-SET—a temporary set of timber placed in a drive
- FAMP (North England)—thin beds of soft tough shale
- FANEGADO (Spain)—90 $\frac{1}{3}$ fanegados = 150 acres
- FANG (Derby)—an air-course
- FAST—term applied in Cornwall to solid rock immediately beneath the surface dirt
- FATHOM—6 feet
- FAULT—dislocation in a rock, load, or seam ; known among miners as a slip, slide, heave, throw, trouble, or check. Faults are sometimes perpendicular, and do not then cause any perpendicular displacement. NORMAL-FAULT—a dislocation such that the portion of the bed that lies on the incline or upper side of the fault appears to have slipped down relatively to the position of the

remaining portion. In normal faults this slip is in the direction of the large angle, and a vertical line from the upper portion does not intersect the lower dislocated portion. **OVERTHRUST, REVERSED, OVERLAP FAULT**—a dislocation in which that portion of the lode above the fault appears to have been pushed up in the direction of the smaller angle, and a vertical line from the upper portion can intersect the lower portion. Such faults as these are exceptional. **DIP-FAULT**—a displacement parallel or nearly so to the dip. **STEP-FAULT**—a series of parallel and step-like faults, with their throws all in the same direction. **STRIKE-FAULT**—a displacement parallel to, or nearly so, and along the line of strike (Figs. 6, 7, 8)

FEATHER-ORE—a sulphide of lead and antimony

FEATHER-EDGE—a passage from false to true bottom

FEEDER—a small vein running into a main lode

FEIGH (North England)—ore refuse

FENCING—fencing in a claim is to make a trench around the boundaries of an alluvial claim to prevent wash-dirt from being worked out by adjoining claim holders

FERRUGINOUS—iron-containing

FILTER—to remove the particles of matter in a liquid by pouring it on to some substance, such as filter paper, so that the liquid runs through clear, leaving a solid residue behind

FIRE-DAMP—light carburetted hydrogen

FIRSTS—the best ore picked from a mine

FISSURE—a crack or rent in rocks

FLATS—narrow decomposed parts of limestone strata which have become mineralised; horizontal parts of a vein. These flats sometimes extend for a long distance horizontally, though they are not very thick

- FLAT-SHEET—sheet-iron floor at the brace and in the flats, chambers, and junctions of drives, to facilitate the turning of trucks
- FLANG (Cornwall)—a double-pointed pick
- FLAT-WALL (Cornwall)—foot-wall
- FLEXIBLE—capable of being bent, but not elastic
- FLINT—a massive impure variety of silica
- FLOAT—detached fragments of a quartz reef
- FLOAT-GOLD—very fine gold dust which floats in running water
- FLOATING-REEF—lumps of auriferous quartz found in alluvial beds
- FLOAT-STONE—a cellular quartz rock; the honeycombed quartz detached from a lode is often called float-stone
- FLOOKAN—*see* FLUKAN
- FLOOR—the layer immediately beneath a metalliferous bed; a false bottom
- FLORAN (Cornwall)—very fine tin
- FLOURING—the breaking up of mercury by excessive stamping into very fine white particles, rendering it useless for amalgamating purposes
- FLOURED MERCURY—*see* FLOURING
- FLOUR GOLD—the finest gold dust
- FLUKAN (or FLUCAN)—a vein filled with a soft greasy clay crossing or running in or under a lode. *See* also SELVAGE
- FLUKE—a rod for cleaning out drill holes
- FLUME—apparatus (boxing or piping) used for conveying water from higher ground to alluvial gold diggings—artificial water-course
- FLUMING—lifting a river out of its bed with wooden launders or pipes in order to get at the bed for working

- FLUSH—splitting of the edge of stone under pressure
- FLUX—a substance used to promote the fusion of metals in the reduction of ore
- FODDER (North England)—21 cwt. of lead
- FOLIATED—arranged in a leaf-like laminæ (such as mica-schist)
- FOOT (Cornwall)—2 gals. or 60 lbs. black tin
- FOOTHOLE—holes cut in the side of a shaft or winch to enable miners to ascend or descend
- FOOTPIECE—a wedge, or slab, on the footwall against which a stall piece is jammed; a piece of wood in the floor of a drive to support a leg or prop of timber
- FOOTWALL—the underwall of a lode
- FOOTWAY—ladders by which miners descend or ascend the shafts of a mine
- FORCE PIECE—diagonal timbering to secure the ground
- FORE BAY—the reservoir from which water passes directly to a water-wheel.
Penstock
- FORK—(Cornwall) bottom of pump; (Derbyshire) prop for soft ground. A pump is said to be going in fork when the water is so low that air is sucked into the wind-bore
- FORMATION—a series of strata comprising those that belong to a one geological age
- FOSSIL—term applied to express the animal or vegetable remains found in rocks
- FOSSILIFEROUS—containing fossils
- FOSSIKING—*see* “CREVICING”—overhauling old workings and refuse heaps for gold
- FOTHER (North England)— $\frac{1}{2}$ chaldron

- FRAME—a sloping board used in the washing of stream tin
- FRAME SET—the legs and cap arranged so as to support a passage mined out of the rock or lode
- FREE—native, uncombined with other substances
- FREE MILLING—ores requiring no roasting nor chemical treatment
- FRESHET—a flood or overflowing of a river caused by heavy rains or the melting of snow
- FRIABLE—easily powdered
- FULLER'S EARTH—an unctuous clay (usually of a greenish-grey tint) compact yet friable. Used by fullers to absorb moisture
- FUSE—in blasting the fire is conveyed to the blasting agency by means of a prepared tape or cord called the fuse
- FUSIBLE—that can be fused or melted
- FUSION—making liquid by heating

(39)

G

- GABBRO—name given to a particular kind of rock in which diallage and plagioclase felspar predominates
- GAD—a small iron wedge used in underground mining
- GAL (Cornwall)—hard gossan
- GALE—a grant of mining ground
- GALIAGE—royalty
- GALLERY—a horizontal excavation in a mine
- GAMELLE (Brazil)—wooden bowl for “panning” out gold
- GANGUE—the non-metallic rock material in a lode; matrix, veinstone
- GANGWAY—a main level or any roadway in a mine
- GANISTER—furnace lining composed of fire-clay and ground quartz
- GASHES and GASH VEINS—metalliferous deposits which occur in limestone rocks only, and being confined to a single stratum are necessarily limited in extent; also any wedge-shaped vein terminating in depth within the formation in which it occurs (Fig. 9)
- GATCHES (Cornwall)—micaceous iron ore
- GATE, GATEWAY or GATEROAD—*see* GANGWAY
- GEM—a precious stone
- GEODES—large nodules of stones, hollow in the centre
- GEYSER—eruptions of heated water

- GLACIER—a body of ice which descends from the high to the low ground
GLANCE—literally, shining. Name applied to certain sulphides
GLOBULE—a small substance of a spherical shape
GOAF—worked-out ground, and the refuse with which it is filled
GOB—*see* GOAF
GOBBING—packing with waste rock
GOTHS (Staffordshire)—sudden burstings of coal from the face owing to tension caused by unequal pressure
GOSSAN—quartz rock with iron oxide as stains, or in small cavities. Found on the surface or near the top of a lode
GOUGE (North America)—soft clay lying between the ore body and sides of the lode
GRADE—an ore which carries a great or comparatively small amount of valuable metal is called respectively a high or a low grade ore. Also the amount of fall or inclination of flumes, &c.
GRAIN TIN—purest tin sent into the market
GRANULATED—in the form of grains
GRANZAS (Spain)—poor ores
GRASS—surface
GRASS ROOTS—at the surface
GREDE (Venezuela)—a yellow iron-stained clay
GREENSTONE—general term used to designate green-coloured rocks, as dolerite, gabbro, &c.
GREYWACKE (or GRAUWACKE)—a compact, coarse-grained, grey sandstone rock, frequently found in Palæozoic Formations

- GRIDDLE—coarse sieve for sifting ore
GROOVE (Derbyshire)—a mine
GROUAN (Cornwall)—granite
GROUND DAMP (or GROWAN)—carbonic acid gas
GROUNDSILL—a log laid on the floor of a drive on which the legs of a set rest
GROUND SLUICING—washing alluvial, loosened by pick and shovel, in trenches cut out of the ground rock, using bars of rock as natural riffles. It is used in shallow placers, hill-claims, bank-claims, and stream diggings
GRUNDY—granulated pig-iron
GREISEN—an altered granitic rock, grey in colour
GRIT—a variety of sandstone of coarse texture
GRIZZLY (America)—bars set in a flume to intercept the large stones. A bar-grating for sizing
GUAG (Cornwall)—worked-out ground
GUBBIN—ironstone
GULCH—a ravine
GULLY—feeder to a creek
GULLIES (Cornwall)—worked-out cavities
GUNNIES (Cornwall)—levels or workings
GUTTER—lowest portion of an alluvial gold deposit, usually containing the richest auriferous dirt

(43)

H

- HACIENDA (Spain)—house where ore is melted
- HADE—dip of a lode or fault, measuring from the horizontal (England) or from the vertical (America)
- HAIARN (Wales)—iron
- HALF-SET—one leg piece and a cap
- HALTER (New Zealand)—a miner working on his own account
- HALVANS—waste of copper ores
- HAND-WHIP—an upright at the top of which is balanced a long sapling, to the thick end of which a bag of earth is fastened to counterbalance a bucket of earth to be raised at the other end
- HANGING-WALL—the upper wall of a lode
- HARD-HEAD—residue from the smelting; contains much iron and arsenic
- HARROW (Australia)—an apparatus used for mixing gold-bearing clays
- HAZLE (North England)—sandstone mixed with shale
- HEAD—pressure of water in pounds per square inch; any subterranean passage driven in solid coal; that part of a face nearest the roof
- HEAD-BOARD—a wedge of wood placed against the hanging wall and against which one end of the stull-piece is jammed
- HEADER—the rock that heads off or delays progress; a blast hole at or above the head; a small drift-way or passage excavated in advance of the main body of the tunnel

- HEADING—the heavier portions collecting in a buddle or sluice, as opposed to the tailings; coarse gravel above gold-bearing “wash-dirt”; the vein above a drift, *see* BACK; a level air-way or narrow passage
- HEAD-RACE—an aqueduct for bringing a supply of water
- HEAVE—*see* FAULT—when the lode stops at the end of a level on account of a cross-course, it is said to be “hove.” Also the horizontal displacement of the faulted portion measured at right angles to the strike
- HEAVY-GOLD (Australia)—gold of the size of gun shots
- HECHADO (Spain)—the dip of a lode
- HEMMA (Sanskrit)—gold
- HIGH-REEF—the bed-rock or reef is frequently found to rise more abruptly on one side of a gutter than on the other, and this abrupt reef is called a High-reef
- HITCH—a fault of less throw than the thickness of the seam in which it occurs
- HOLE—to undercut a seam of coal, &c.; to make a communication from one point to another
- HORIZON—strata or beds formed during the same geological period are said to lie in the same horizon
- HORN—a hard siliceous rock
- HORNSTONE—*see* CHERT
- HORSE—term applied to masses of country rock found in a lode
- HORSEFLESH ORE—purple copper ore
- HUEL—a mine; also WHEAL
- HULK (Cornwall)—to pick out the soft portions of a lode
- HUNGRY—worthless-looking

HURDY-GURDY—a water-wheel

HUSHING—prospecting by laying ground bare by sudden discharges of pent-up water

HUTCH (Cornwall)—an ore-washing box

HYDRAULICING (West America)—working auriferous gravel beds by hydraulic jets

HYDRAULIC-HORSE (America)—the hose used to conduct a stream of water, the force of which washes down the face of the alluvial gold-bearing deposit

HYDROUS—containing water in its composition

I

- IGNEOUS—certain rocks that have been in a more or less fused state. They comprise volcanic and plutonic rocks
- IMPREGNATIONS—ore deposits consisting of the country rock impregnated with ore, usually without definite walls (Fig. 10)
- INCH MINER'S (America)—varies in different localities. The usual one (which discharges 95 cubic feet per hour) is the amount of water that will flow through a horizontal opening, an inch square under a head of six inches; this is about 593 galls. per hour
- INCLINE—a slanting shaft
- IN-FORK—*see* FORK
- IN-PLACE—of rock occupying, relative to surrounding masses, the position it had when formed
- INSET—the entrance of a mine pathway where the cages are loaded
- INCRUSTATION—a coating of matter
- IRON-SINTER—soft greyish-brown precipitated oxide of iron, often stalactitic
- IRONSTONE (Cornwall)—any hard tough stone
- IRIDESCENT—showing rainbow colours
- IRON HAT—decomposed ferruginous mineral capping a lode

(48)

J

JACOTINGA (Brazil)—iron ores associated with gold

JADDING or JUDDING—*see* HOLING

JEWELLER'S SHOP (Australia)—rich patches of gold-bearing matter

JIGGING—a process of sorting ores according to specific gravity, by means of a sieve agitated up and down, usually in water

JOINTS—cracks or partings across the bedding planes of rocks

JUDD—The *whole working*, a portion of coal ready for extraction ; in *pillar working*, the unremoved part of a pillar

JUDGE (Derbyshire & North England)—a measuring staff

JUMP—an up-throw or downthrow of a fault

JUMPING A CLAIM—taking possession of an abandoned or unworked claim by force or otherwise

K

- KAL—a coarse kind of iron
KAMN (Cornwall)—fluorspar
KAOLIN—porcelain or china clay ; decomposed felspathic material
KAZEN (Cornwall)—a sieve
KECKLE-MECKLE—poorest lead ore
KEEVE (Cornwall)—a large vat
KERNED (Cornwall)—pyrites hardened by exposure
KEVIL (Derbyshire)—a calcspar found in lead veins
KIBBLE—a mining bucket
KIESELGUHR—infusorial earth, consisting chiefly of fossil diatoms
KILLAS— a name applied in Cornwall to a clay slate or shale through which lodes run.
Clay-slate-knoten—concretions of sandstone with cement of galena occurring
in a sandstone of Rhenish Prussia. Knotten-sandstein— name of bed containing
above concretions
KIND—tender, soft, easy ; likely looking stone
KIRVING (North England)—the cutting made beneath the coal seam

(51)

L

- LADDER WAY or (LADDER ROAD)—the particular shaft or compartment used for ladders
- LAGOON—a shallow lake, pond, or marsh
- LAMINA—a thin slice
- LAMINATED—arranged in laminae
- LAPPIOR (Cornwall)—an ore dresser
- LAUNDER—water trough
- LAVA—rock formed by the consolidation of liquid matter which has flowed from a volcano
- LAVADOROS (Spain)—gold washings
- LAZYBACK (Staffordshire)—a coal stack
- LEACH—to dissolve out
- LEAD—LEDGE (America) REEF (Australia) LODE or VEIN (England)—a more or less vertical deposit of ore, formed after the rock in which it occurs; a well-defined bed of alluvial pay-dirt or auriferous gravel
- LEADER (DIVIDER)—small vein in rock, the latter impregnated with ore on either side of the leader
- LEADINGS (Australia)—the unprofitable dirt above pay-dirt, supposed to lead to a larger deposit
- LEAT—water course
- LEAVINGS (Cornwall)—halvans

- LEDGE—same as a lode
- LEG-PIECE—an upright log placed against the side of a drive to support the cap piece
- LENTICULAR—of an onion shape (Fig. 11)
- LEVEL—horizontal gallery in a mine
- LIGNEOUS—of the nature of wood
- LIKELY—favourable to the presence of metals
- LINING—planks arranged against frame sets
- LINNETS (Derbyshire)—greenish or greenish-yellow lead ores
- LITHARGE (PROTOXIDE OF LEAD)—used as a flux by assayers
- LITTLE GIANT—a movable nozzle attached to hydraulic hose for sluicing purposes
- LOAD—a truckful of 22—25 cwts.
- LOADSTONE or LODESTONE—an iron ore consisting of protoxide and peroxide of iron, is magnetic ; stone found in veins or loads
- LOAM—a mixture of fine sand and clay
- LOB OF GOLD (Australia)—rich gold deposit found in an area of small extent
- LOCATE—to establish a right to a mining claim
- LODE—this term as used in the American Acts of Congress is applicable to any zone or belt of mineralised rock lying within the boundaries clearly separating it from the neighbouring rock ; a body of mineral or mineral-bearing rock so far as it may continue unbroken and without interruption ; usually speaking, a lode is that part of a vein which contains a workable percentage
- LODE PLOT—a horizontal lode

LONG TOM—a wooden sluice 24 ft. × 2 ft. × 1 ft. used in the washing of gold-bearing “dirt”

LONG WALL—a system of working low beds and seams with long faces, so as to extract all the valuable mineral

LOOB (Cornwall)—sludge from tin-dressing

LUTE—pasty matter to close joints of chemical apparatus, and to coat surfaces so as to protect them from the action of flame

LYING-WALL—*see* FOOTWALL

M

MACIZO (Spain)—the part of a lode unworked

MADE-GROUND—a recent deposit

MAKINGS (North England)—small coal produced in kirving

MALLEABLE—capable of being hammered out

MAN ENGINE—machine by which men ascend and descend a mine

MANTO (Spain)—a single layer of a stratum

MARCO (Spain)—weight = 8 ounces

MARL—clay containing carbonate of lime

MATTE, MATT, or MAT—product of smelting whereby metals are concentrated as sulphides

MATRIX—the mineral associated with ore in a lode ; gangue, veinstone

MEAR (Derbyshire)—82 yards along the vein

MEASURIE—strata of coal or formation containing coal beds

MEERSCHAUM—a white soft mineral, dry to the touch, and adhering to the tongue when licked. Is a silicate of magnesia. Specific gravity, .8 to 1.0 when dry. Occurs in veins or in kidney-shaped nodules in serpentine rocks

MESA—a tableland

METALES CALIDOS (hot metals (South America)—minerals capable of amalgamation, such as native silver, hornsilver, &c.

- METALES FRIOS (cold metals)—minerals not suitable for the amalgamation process
- METALLURGY—art of extracting metals from their ores, &c.
- METAMORPHIC—altered
- METASOMASIS—the complete change of rocky matter into ore by the chemical replacement of one or more of its constituents
- MILLS—works for crushing and treating gold or silver ores by amalgamation, chlorination, &c.
- MINE—mineral workings carried on either in open daylight or underground by artificial light; in law confined to the latter
- MISTRESS (North England)—a miner's lamp
- MOCK-LEAD (Cornwall)—zinc blende
- MOCK ORE—a false kind of mineral
- MOIL (Cornwall)—a wedge-pointed drill
- MONTON (Spain)—a pile of ore. In Mexico a Monton = 17 quintals
- MORPHOLOGICAL—pertaining to the form or shape
- MOTHER LODE—the principal vein of any district; main-lode
- MOUNTAIN BLUE—blue copper ore
- MOUNTAIN CORK—a variety of asbestos
- MOUNTAIN GREEN—malachite
- MOUNTAIN LIMESTONE—carboniferous limestone
- MUCKS (Staffordshire)—bad earthy coal
- MUDSTONE—a fine, more or less argillaceous rock, having no fissile structure, and somewhat harder than clay

MUESTRAS (Spain)—samples or ore

MUFFLE—a small oven-shaped fire-proof furnace

MULLER—the upper grinding or rubbing shoe of an amalgamating pan

MULLOCK (Australia)—debris of the country rock filling a fissure

MUNDIC—iron pyrites

MUSCHELCHALK (German)—a limestone formation containing fossil shells

N

- NATIVE—metals that occur in a state of approximate purity are said to be native.
When two or more such metals are mechanically mixed the substance is called a native alloy
- NAYS—*see* NOGS
- NEVADA TIMBERING—a method of underground working employed in Nevada (square sets)
- NICK—to cut or spear coal after holing
- NIP—when the roof and floor of a seam come close together pinching the mineral between
- NITRATE—compound of a base with nitric acid
- NITTINGS—refuse of good ore
- NODULE—rounded concretion frequently enclosing organic or other remains
- NOGS or NAYS (Cornwall)—supports for the roof of a mine
- NUGGETS—natural lump of gold or other metal. Applied to any size above 2-3 dwts. in weight
- NUTS—coals of about walnut size

(59)

O

- OFF-TAKE—the raised portion of an upcast shaft above the surface
- OITAVO (Spain)—about the eighth part of an ounce
- OJO (Spain)—a bunch of ore
- OLD MAN—old workings in a mine
- ONCA = 422.72 grains Troy
- OOLITIC—consisting of small rounded grains (with concentric structure) resembling the roe of a fish ; Roestone
- OPEN-CAST—workings having no roof
- OPEN-CUT—to commence working after sinking a shaft
- OPEN-CUTTING—an excavation made on the surface for the purpose of getting a face wherein a tunnel can be driven
- ORE—mineral matter containing useful metal in sufficient proportion to be commercially treated
- ORE AGAINST ORE—the approximate parallelism of valuable deposits occurring in parallel lodes (Fig. 12)
- ORTHOCLASE—variety of felspar
- OUTCROP—the parts of a lode or bed exposed at the surface
- OVERBURDEN—soil or rock overlying a bed of useful mineral

OVERHAND STOPING (*see* STOPING)—where the miner excavates the lode above him and has the deads beneath his feet (Fig. 13)

OVERLAP FAULT—*see* FAULT

OXIDATION—conversion of metals into oxides

OXIDE—compound of a metal with oxygen

OXIDIZING—combining with oxygen

P

- PACK—rough material built up to support the roof
- PACKING (Cornwall)—final dressing of tin or copper ore
- PACOS—*see* COLORADOS
- PADDOCK—an excavation made for procuring wash-dirt in shallow ground; a place built near the shaft mouth for storing ore
- PAINT-GOLD—the very finest gold coating quartz pebbles in cement, or other minerals
- PALÆOZOIC—the oldest series of rocks in which fossils of animals occur
- PAN—to separate gold from other matter by washing it in a basin is called “panning out”
- PANEL—a large rectangular block of coal *in situ*. In panel workings the mine is divided into several panels, each worked by its own board and pillar.
- PANNIO—the strata through which a lode passes
- PARE (Cornwall)—gang or party of men
- PARTING—dissolving by acid the silver from the gold in the button derived by cupellation; a layer of rock in a coal seam
- PASS—a hole for throwing down ore to a lower level; a passage for men to travel from one level to another
- PASS-BY—a siding in which tubs pass one another underground
- PAY DIRT—payable portion of alluvial deposits

- PEACH STONE (Cornwall)—a soft greenish rock (chlorite) found in certain lodes.
A peachy lode is often a very good one for tin
- PEE (Derby)—a fragment of lead ore
- PENSTOCK—*see* FOREBAY
- PENTICE — a few pieces of timber laid as a roof to screen men working in dangerous places
- PEROXIDE—the oxide which contains the greatest amount of oxygen
- PETER-OUT—to pinch out or disappear (said of a vein)
- PICUL (China)—a weight of 133½ lbs.
- PILE (Australia)—to “make a pile” is to make a lot of money
- PILING—to sink a shaft through drift by driving piles down behind frames of timber
- PILLION (Cornwall)—metal remaining in slag
- PILLAR & STALL — working seams or beds by first leaving blocks of ore to support the roof, and then robbing them
- PINCH OUT (To)—when a lode diminishes to nothing
- PIPING—washing gold deposits by means of a hose.
- PIPE VEINS—ore bodies that, upon being excavated, leave small chimney-like openings; a horizontal extension of a lode
- PITCH (Cornwall)—the part of a lode let out to be worked on tribute; the angular inclination of a reef in the direction of the strike is called its pitch
- PLACER—an auriferous alluvial deposit
- PLANT—all the machinery in use at a mine or works
- PLASTIC--that can be moulded into different forms

- PLAT—an enlargement in the shaft for various purposes
- PLATE—black shale, a slaty rock
- PLATEAU—flat table land
- PLUM (Wales)—lead
- PLUMBAGO—graphite or black lead
- PLUSH COPPER—chalcotrichite, suboxide of copper
- PLUTONIC—igneous rocks that have solidified under pressure below the earth's surface
- PNEUMATOLYSIS—metasomatic replacement of minerals by metallic vapours.
Term introduced by Vogt.
- POCKET—a single deposit of mineral, not a vein
- PODAR (Cornwall)—copper pyrites
- POLROZ (Cornwall)—water-wheel pit
- POPPET HEAD—the hoisting gear frame over a shaft
- PORPHYRITIC—of the nature of porphyry, that is, with isolated crystals visible to the eye
- POST—limestone strata divided horizontally with very thin beds of shale
- POST-AND-STALL—a mode of working coal in which so much is left as pillar and so much is taken away. Also called BORD-AND-PILLAR, PILLAR-AND-BREAST
- POT GROWAN (Cornwall)—decomposed granite
- PRAIRIE—name given in some parts of North America to an extensive treeless plain
- PRECIPITATE—name given to solid matter which is separated from a solution by the addition of reagents, or by exposure to heat

- PROSPECT—the yield of gold by panning; to seek for minerals
PRIAN (Cornwall)—soft white clay
PRILL (Cornwall)—the best ore after cobbing
PROSPECTOR'S CLAIM—a piece of ground larger than an ordinary claim, given to the discoverer of mineral treasures in a country
PUDDING STONE—a coarse conglomerate with round pebbles in it
PUDDLING (Australian and America)—mixing gold-bearing clays with water
PULP—crushed wet ore
PULVERISE—to powder
PYRITES—mineral composed of a metallic (usually iron) sulphide
PYROXENE—a group of minerals of which augite is the chief member
PURSER (Cornwall)—the cashier and paymaster at the mine
PUTTY STONES (America)—soft pieces of decomposed rocks found in alluvial diggings

Q

QUARTZ—silica or oxide of silicon, often coloured by impurities

QUARTZITE—a granular siliceous sandstone (sometimes of a schistose structure),
the grains of quartz being partly crystalline

QUARTZOSE—rock with a great deal of quartz in it

QUICK—productive ; mercury in a fit state for amalgamating

R

RABBAN (Cornwall)—yellow dry gossan

RACK (Cornwall)—a stationary buddle

RACE—a channel for conducting water to or from the working spot. The former is termed a head race, the latter a tail race

RACKING—separating ores by means of water on an inclined plane

RAFFAIN (Cornwall)—poor ore

RAG BURNING (Cornwall)—the first roasting of tin-witts

RAGGING (Cornwall)—rough cobbing

RAISE—*see* RISE

RAKE—a fissure vein

RAMBLE (North England)—shale bed overlying coal

RAVINE—a deep narrow valley

RAW ORE—unroasted ore ; calcined ore before cooling

REAGENT—a substance added to determine the presence of some other substance by the mutual action of the one towards the other

REDUCTION—the separation of a metal from its compounds

RED RAB (Cornwall)—red slaty rock

REEF (Australia)—a lode. Outcrop of strata

REEF WASH—gold-bearing drift where two under-ground leads join

- REFRACTORY—rebellious, not easily treated by amalgamation or ordinary processes
- REGULUS—*see* MATTE
- RESERVE—ore already opened up which may be quickly broken down for treatment
- RESIDUE—the solid matter remaining after a liquid has been filtered or evaporated
- REVERBERATORY—furnace in which the flame from the grate is reflected down by the roof on to the charge on the bed of the furnace
- RIBB—lines of ore in the veins
- RICK (North America)—open heap in which coal is coked
- RIDER—*see* HORSE
- RIDDLE—a large iron sieve for sifting ore
- RIFFLES or RIPPLES—strips of wood, &c., fixed across and rising above the bottom of a sluice, in order to catch the gold during the process of washing; mercury may or may not be used, in the latter case the riffles are called “blind”
- RIMROCK—bed rock forming a boundary to gravel deposit or placer
- RING ORES (COCKADE ORES)—metallic sulphides deposited regularly around vein inclusions
- RISE—the working place at the end of a level, the floor being above the general working level; a winze reversed or excavated upwards
- ROASTING—driving off volatile matter, such as sulphur, arsenic, &c., by gently heating the substance and allowing air to have free access to it during the operation by means of stirring
- ROCK-FILLING—the filling up of worked out portions of a mine with rock, to support the mass above the levels
- ROOF—the layer immediately above a metalliferous bed

ROTTEN REEF—In South Africa, a soft deposit found in connexion with auriferous conglomerate

ROUGHS—the second, or inferior quality of cross tin

RULLERS (Cornwall)—persons who work the wheelbarrows underground

RUN—course of a vein ; collapse of ground in a mine. Ore is spoken of as running so much metal per ton

RUSTYGOLD—gold coated with iron oxide

S

- SADDLE—strata bent upwards into a ridge, with the concavity away from the centre of the earth (anticlinal)
- SALAMONIAC—ammonium chloride
- SALT (chemical)—the combination of an acid with a base
- SALTING A MINE—introducing mineral matter into a mine to deceive purchasers
- SAMPLE—specimens of ore for assaying
- SCAD (America)—uncommon name for a nugget
- SCALL—loose ground
- SCHISTS—metamorphic rocks showing a peculiar foliated (schistose) structure
- SCOVAN (Cornwall)—a tin lode showing no gossan at surface
- SCOVE (Cornwall)—purest tin ore
- SCRIN—smallest kind of vein
- SCROWL (Cornwall)—loose ore where a vein is crossed
- SEAM (Cornwall)—a loose load of ore; stratum or bed of coal or mineral; it is convenient to consider as “Seams” any stratified deposits in which the impregnated, altered, or pseudomorphous mass occupies the position of an original bed, and to call the sheets “Veins” when they cross the bedding planes, or occupy a fissure, or have been formed by impregnation or metasomasis
- SEAT—bottom of a mine

- SECONDARY ROCKS—those older than the Tertiary and newer than the Primary
- SECTILE—easily cut
- SEDIMENTARY ROCKS—deposit of sand, clay, mud, &c., from water, also of volcanic ash
- SELVAGE or FLUCAN (America)—an unctuous clay sometimes slickensided or scored, which extends along one or both sides of the walls of a lode
- SET OF TIMBER—timbers used in a level, consisting of a ground sill, cap-piece and two legs
- SHADD (Cornwall)—rounded fragments of ore overlying a vein
- SHAFT—a vertical or inclined excavation in a mine
- SHAKES—caverns in lead mines; cracks or fissures
- SHALE—indurated fine-grained rock with fissile structure
- SHELF—the rock on which drifted matter rests
- SHEPHERDING (Australia)—doing just as little work on the mine as is required by mining law
- SPHERULITIC ORES—segregated ores with radial crystalline structure
- SHET (Staffordshire)—fallen roof of coal mine
- SHIFT—time during which men work in a mine
- SHOAD (Cornwall)—*see* SHAD
- SHODING (Cornwall)—prospecting; tracing pieces of detached veinstones to the parent lode
- SHOES—movable iron block, at the lower end of a stamp
- SHOOT (SHUTE, CIIUTE)—an ore body forming a continuous column, frequently occurring at the intersection of veins; a path down which mineral is tipped

- SHOT—the firing of a blast
 § HOTTED GOLD—granular pieces of gold like shot
 SICKENING—coating of impurity on quicksilver, breaking the latter into fine globules and retarding amalgamation
 SIDELONG REEF—the overhanging wall of bedrock in alluvial formations running parallel with the course of the gutter
 SIDDLE—inclination
 SILICA (Oxide of Silicon)—quartz, flint, sand, &c., are nearly pure silica
 SILICATE—compound of a basis with silicic acid
 SILICEOUS—containing silica
 SILL—a piece of wood across the bottom of a drive, on which the legs of a set stand
 SINK—an excavation under a level. To “sink” is to excavate downwards in a mine
 SINTER (Siliceous)—a silica formation deposited from thermal waters
 SKIMPINGS (Cornwall)—the poorest ore skimmed off the jigger
 SKIP—a box for raising ore
 SKIT (Cornwall)—a pump
 SLACK—small coal ; (Derbyshire) mud in a mine
 SLAG—vitreous mass which covers the fused metal in the smelting hearths. In iron-works it is called cinder
 SLANT—a heading driven diagonally between the dip and the strike of a coal seam, also called a RUN
 SLEEPING-TABLE (Cornwall)—a buddle
 SLICKENSIDES—name given to smooth striated surfaces of rocks or of mineral lodes

- SLIDE—*see* FAULT
- SLIME ORE—finely crushed ore mixed with water to the consistency of mud of slime
- SLIMES—most finely crushed ore pulp
- SLIP—*see* FAULT
- SLOVAN—the “cropping out” of a lode or stratum
- SLUDGE—*see* SLIMES
- SLUICE—a long channel in rock or of timber, with checks to catch gold
- SLUICING—working gravel by excavating and washing by water in sluices
- SLURRY (North Wales)—half melted ore
- SMALLS—small-sized pieces of ore and gangue
- SMEDDUM—lead ore dust
- SMUT (Staffordshire)—soft bad coal
- SOLLAR (Cornwall)—platform or landing fixed in shaft for ladders to rest on
- SOWS—deposits of haid
- SOLE—bottom of a level, or of a mine
- SPALL—to hand-break ore for dressing
- SPAR (Cornwall)—quartz
- SPATHIC—sparry. Term applied to certain carbonates
- SPEISS (SPEISE)—fused combinations of arsenic with some metal, such as iron, copper, &c.
- SPIEGELEISEN—variety of highly-carbonised pig-iron, containing 1–20 % of manganese
- SPILLS (Cornwall)—a temporary lagging driven ahead on levels in loose ground

- SPITZKASTEN—a pyramidal box through which a current of water rises, used for sizing and concentrating ores
- SPITZLUTTEN—hydraulic ore concentrators
- SPOTTED (American)—leads in which the gold is irregularly disseminated
- SQUAT (Cornwall)—tin ore mixed with spar
- STALACTITIC—like a stalactite (of the form of a cylinder or cone), as the carbonate of lime incrustations hanging from the roof of limestone caverns. Stalagmites are the similar column or cones which are on the floor of the caverns
- STAMP—a weight used for crushing ore
- STANNIFEROUS--containing tin
- STANDAGE—pump reservoir
- STANNARY—tin works
- STEATITE—a mineral usually of a greenish colour and soapy to the touch containing much talc
- STEP-FAULTS—*see* FAULTS
- STOCKWORK—rock through which a number of small veins occur together
- STOPE—to excavate mineral in a series of steps up or down. (Overhand and underhand, stoping respectively)
- STOWING—a method of mining by removing all the material of the vein, and packing the waste into the space left
- STRAKE—an inclined board used in the separation of gold from small quartz
- STRATIFIED—made up of parallel beds, layers, or strata of sedimentary, chemical, or organic origin; rocks in which no such structure exists are termed Unstratified

- STRATUM—a bed or layer
STREAK—the colour of a mineral when scratched
STREAMWORKS—alluvial or other detritus washed for tinstone.
STRIKE—the straight line in which the plane of a bed or lode cuts the plane of the horizon
STRING—a thin course of ore
STRIPPING—working a vein by quarrying
STRUCTURE—the arrangement of the grains or component parts of a mineral
STUDDLES—timber props
STUFF—ore associated with the gangue of a lode
STULL—platform to carry miners or waste
STUP—powdered coke or coal mixed with clay
STURT—a tribute bargain profitable to the miner
STYTHER (North England)—choke-damp
SUBLIMATE—the matter formed by condensed vapour when a mineral is heated
SUBMETALLIC—of imperfect metallic lustre
SUBTRANSPARENT—of imperfect transparency
SULPHATE—a salt containing sulphuric anhydride
SULPHIDE—a combination of metal with sulphur
SUMPS—pits sunk below the foot of mining shafts for the purpose of draining
SUN VEIN—a vein running in a southerly direction
SWAD (Derbyshire)—a thin layer of stone or refuse coal at the bottom of a coal seam
SWEEPING-TABLE—a stationary buddle

SWITHER (North America)—a crevice branching from a main lead lode

SWEET ROAST—the removal by roasting of the whole of the sulphur in an ore

SYMPHYTIC—used of ore deposits as were formed simultaneously in a geological
sense with the surrounding rock

SYNCLINAL—*see* TROUGH

T

- TABLE LAND—an elevated plain or plateau
- TAILINGS—the gangue matter left after it has been washed or otherwise worked for metal—a cubic yard usually contains about 1.35 tons
- TAIL RACE—an aqueduct for conveying away dirty water and tailings
- TERRACE—successive levels formed by a river sinking in its course
- TEARY GROUND—ground easily broken up or worked
- TEEM—to pour, or tip
- TERRERO (Spain)—waste heap of a mine
- TERTIARY ROCKS—those of the most recent formation, and above the Secondary and Primary
- THERMAL—hot springs
- THILL (North England)—floor of coal mine
- THROW—the amount of displacement produced by a fault, measured vertically, is called its throw, and is often spoken of as an upthrow or downthrow, according to the side on which is approached by the miner
- THURL (Staffs)—to cut through from one working into another
- TICKETING (Cornwall)—purchasing ore by tender on tickets
- TIN-WITTS (Cornwall)—product of first dressing of tin ores, containing also wolfram and sulphides

- TINSTONE—ore containing small grains of oxide of tin ; tin ore
- TIN STUFF—ore obtained from a tin lode
- TIPPLER—waggon for conveying and tipping ore ; apparatus for effecting the same
- TOAD STONE, or BLACKSTONES (Derby)—dense, hard trap rocks, usually unproductive
- TON—long ton, 2,240 lb. ; short ton, 2,000 lb. ; 50 cubit feet of wood ; about 13 cubic feet of unbroken quartz, or 20 cubic feet if broken
- TOSSING—shaking powdered ore in water to effect separation of heavy and light particles
- TOURMALINE—a gem, variously coloured, found sometimes in large transparent crystals in granite, metamorphic rocks, limestone, soapstone, &c.
- TRACHYTE—a volcanic rock containing felspar, hornblende and sometimes mica. Has a rough surface when broken
- TRANSLUCENT—allowing light to pass through, yet not transparent
- TRAP—a volcanic rock ; generally grey or greenish ; diorite, dolerite, basalt are varieties
- TRAPPEAN ROCKS—certain rocks (such as basalt, &c.) which form in terraces
- TRELOOBING (Cornwall)—stirring the slimes in water
- TREND—the course of a vein
- TRIBUTE—when miners work on tribute, their recompense is a certain percentage of the profits derived from the produce of the mine
- TRIBUTERS—miners paid by results
- TROMMEL—a punched revolving cylinder used for washing and sorting ores
- TROUBLE—*see* FAULT

- TROUGH—strata bent downwards with the concavity towards the centre of the earth, forming inverted saddles (Fig. 1, D)
- TROUGH FAULT—two faults in contrary directions of about the same angle form a trough fault (Fig. 14)
- TUBBING—the cast iron, or timber, or walling of a shaft to keep back water
- TUCKER GROUND (Australia)—poor ground, just rich enough to allow a miner to buy food and the bare necessities of life
- TUFA (Calcareous)—a kind of limestone rock deposited by water containing carbonate of lime; usually porous. (Volcanic)—a rock made up of fragments of ash or other volcanic matter, more or less cemented together
- TURBARY—a peat bog
- TUT-WORK—work paid for by the piece not by results. *See* DEAD WORK
- TWYER or TUYERE—the aperture through which the air or blast is introduced into a furnace
- TYE—the point where two veins cross; also an adit

U

UNCONFORMABLE—when the layer of rock resting on another does not correspond with it in the angle of bedding

UNDERCUT—to hole

UNDERHAND STOPING—where the miner excavates the lode below him, and throws the deads up on to staging erected behind him (Fig. 15)

UNDERLIE—underlay or hade; the length of the horizontal line drawn from the vertical and cutting the lode at a distance of 6 feet measured along the dip; also the angular inclination or hade of the lode from the vertical; the underlie is the complement of the dip; thus a plane that dips 60° will underlie or hade 30°

UNSTRATIFIED—not arranged in strata

UPCAST—shaft through which return ventilating air ascends

V

VADOSE—superficial

VAMPING—the deads or *debris* of a stope

VAN—to dress or concentrate ore by hand or machine

VANNING—washing “tin-stuff” by means of a shovel. *See* VAN

VEND (North England)—total sales of coal from a mine

VEINS—somewhat tabular or sheet-like deposits, formed more or less since the enclosing rock (country). Veins are either the contents of fissures; or bands of rock, impregnated with ore, adjacent to fissures; or portions of the original rock of which the constituents have been replaced by new mineral. Veins may occur in stratified or in unstratified rocks, and in the former they usually cut across the planes of bedding. The term “True Fissure Vein” is applied to the mineral contents of a distinct gap in the earth’s crust, between two fracture planes, probably caused by contraction, compression, or torsion. The depth to which such a plane of fracture can extend is placed by Heim at 15,000 feet. It is certainly deeper than the probable sphere of mining operations.

VEIN STUFF or VEIN STONE—ore associated with gangue

VESTRY (North England)—refuse

VINNEY—copper ore with green coating

VITREOUS—glassy

VOLATILE--capable of easily passing off as a vapour

VOLCANIC—igneous rocks that, like recent lavas, hardened near the surface

VUGH—a cavity in a rock or lode. *See* GEODE

W

WALE (North England)—hand-dressing coal

WALLS—the boundaries of a lode : the upper one being the “hanging,” the lower the “foot-wall”

WASHDIRT (America and Australia)—auriferous gravel, sand, &c.

WASH OUT or DUMB FAULT—the denudation of a portion of a bed, by a current, during the general period of deposition

WEATHERING—the disintegrating action of atmospheric agents

WEELDON—old ironstone workings

WHEAL—*see* HUEL

WHIM—an apparatus for drawing the ore of a mine up the shaft

WINZE—a shaft sunk from level to level

WHIP—a winding pulley

WHITS—*see* TIN-WITTS

WILD-LEAD—zinc blende

WYTHERN (Wales)—lode

(84)

Y

YELLOW ORE (Cornwall)—chalcopyrite; copper pyrites

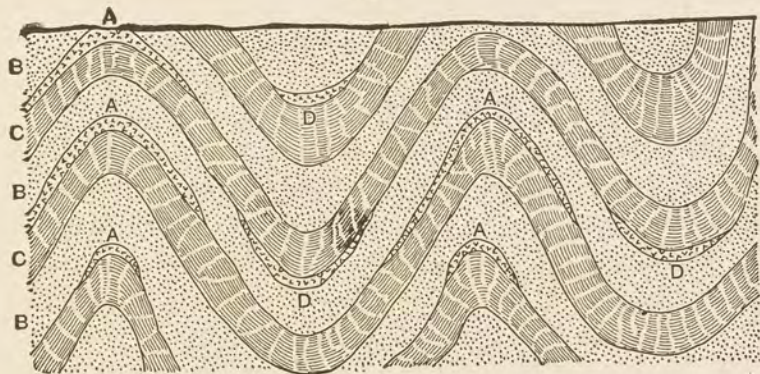
Z

ZEOLITES—certain hydrous silicates of alumina (with alkali, &c.) They swell up and boil when exposed to the heat of a blowpipe flame

ILLUSTRATIONS.

The author is indebted to the courtesy of Messrs. MACMILLAN & Co. and Messrs. E. & F. N. SPON for the following illustrations, of which Figs. 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, and 14, are from "A Treatise on Ore Deposits" (by J. A. PHILLIPS and HENRY LOUIS), and Figs. 5, 13, and 15, are from "The Miners' Pocket Book" (by LOCK).

Fig. 1.



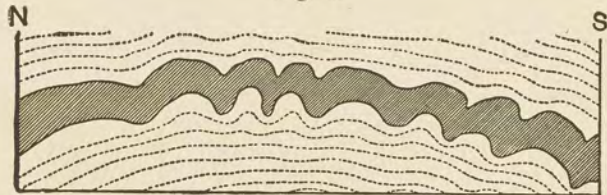
A.—Saddle Reefs.

B.—Sandstone.

C.—Slate.

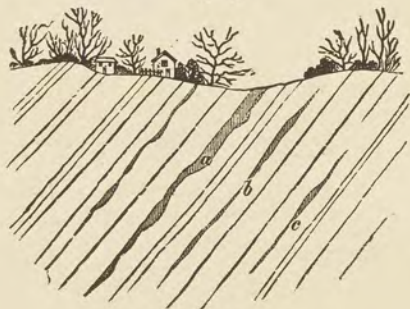
D.—Inverted Saddles.

Fig. 2.



"Barrel" Quartz Vein.

Fig. 3.

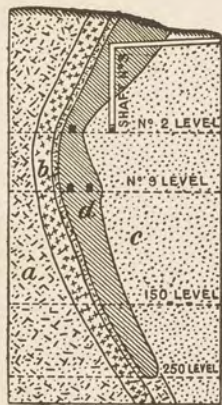


Bedded Veins.

Fig. 4.

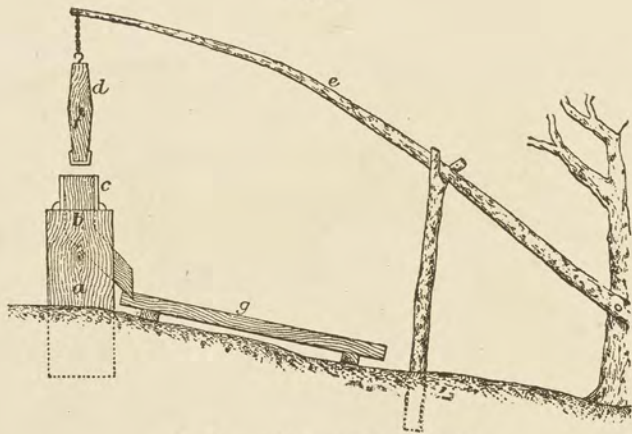


Contact Deposits.



d Contact Deposit.

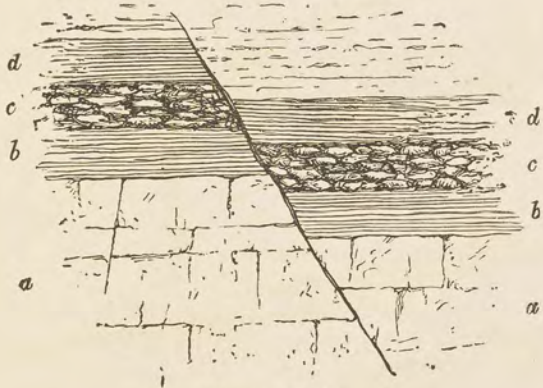
Fig. 5.



Dolly, or Prospecting Stamp.

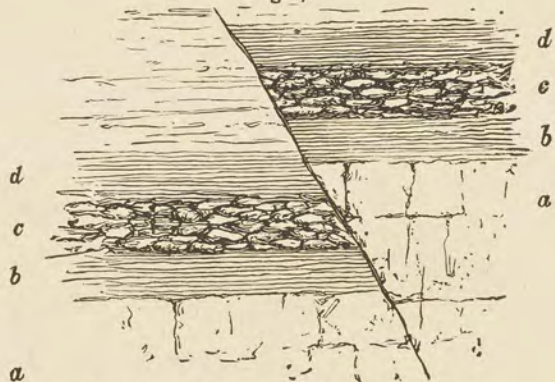
abc The Mortar ; *df* Stamper ; *e* Working Lever ;
g Plate or Blanket-table.

Fig. 6.



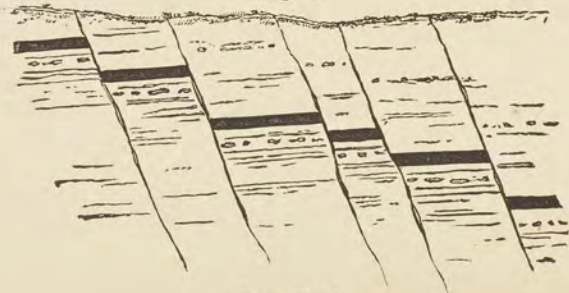
Normal Fault.

Fig. 7.



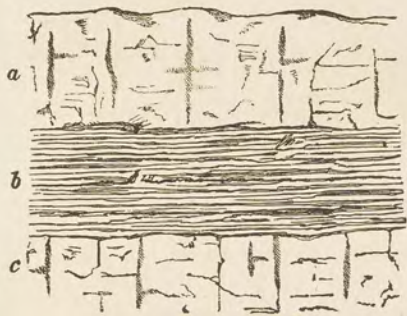
Overthrust, Reversed or Overlap Fault.

Fig. 8.



Step Fault.

Fig. 9.



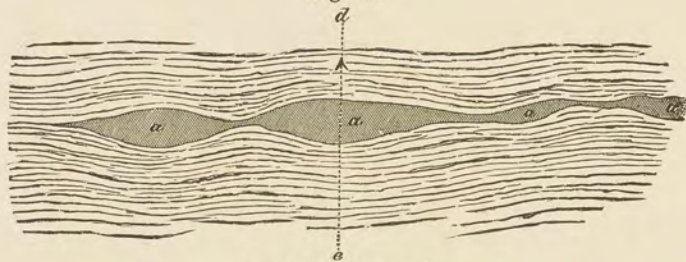
Gash Veins.

Fig. 10.



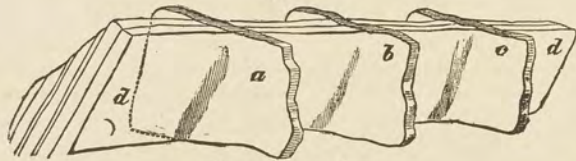
a b Vein—the adjacent dotted portion being an impregnation.

Fig. 11.



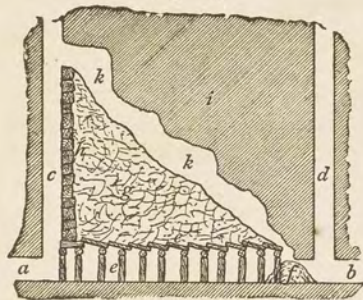
Lenticular Deposits.

Fig. 12.



Ore against Ore.
a b c Veins ; *d* The Country Rock.

Fig. 13.



Overhead Stoping.

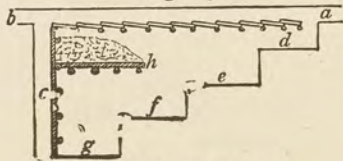
a b Level ; *e* Timber Roof of Level and Floor of the Stopes ; *d* Winze ;
c Timber or Pack Wall ; *g* Deads ; *i* Unworked Ground,

Fig. 14.



A Trough Fault.

Fig. 15.



Underhand Stopping.

a b Main Level; *d e f g* Steps or Stopes; *h* Staging for the Deads.

GEOLOGICAL MAPS.

GEOLOGICAL SURVEY MAP SIGNS.

(a) Connected with Stratification.

- + Horizontal.
- | Vertical (longest line on the strike).
- × Undulating.
- ∩ Contorted.]
- ↙ Highly inclined)
- ↘ Undulating) With general dip in the direction of the
- ↙ Contorted) arrow.
- ↖ Anticlinal axis.
- * Synclinal axis.
- ↙ Dip from observation (with No. of degrees, thus ↙ 5°).
- ↘ Dip from information.
- / Cleavage.
- ⊙ Limestone quarries.
- S. Q. Slate quarries.

Interrupted Lines = A doubtful or drift-covered boundary.

White Lines = Faults at the surface.

Yellow Lines = Faults underground.

Thick Black Lines = Coal crops. When doubtful, lines interrupted.

- Bore hole.
 ⊖ Mine shaft.
 ⚓ DH Day hole (entrance to adit).
 = Colliery levels.

(b) Connected with Glacial Drift.

- Roches moutonnées.
 ⊖ " " striated } Direction of Ice-flow not
 ⊖ Flat surface " } apparent.
 ⊖ Roches moutonnées " } Showing direction of Ice-
 ← ⊖ Flat surface " } flow.

(c) Indicating Ores of Metals.

- | | |
|-----------|--------------|
| ⊙ Gold. | ⋈ Silver. |
| ♀ Copper. | ♃ Tin. |
| ♁ Lead. | ♁ Manganese. |
| ♂ Iron. | ♃ Zinc. |

Gold Lines = Mineral Veins.

Gold Dots = Stream Tin.

Gold Rings = Pipe Veins.

JOHN DAVIS & SON,

ALL SAINTS' WORKS, DERBY.

118 NEWGATE STREET, LONDON, E.C.



SURVEYING
INSTRUMENTS.



MINERS'
SAFETY
LAMPS.

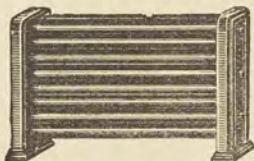
ELECTRIC MINING MACHINERY.

Catalogues free.

THE MEADOW FOUNDRY Co. LTD.

MANSFIELD, NOTTS, ENGLAND.

THREE SILVER MEDALS.



COILS, Ornamental and Plain,
2-in., 3-in., and 4-in.
Over 500 stock sizes.
Vertical and Horizontal.



**RICHARDSON'S
PATENT**



**RICHARDSON'S PATENT
ASH or DUST SHOOT.**
A complete Shut-off, and Dust
Proof. Painted, 26/- each.
Handsomely Bronzed, 38/-
Galvanised, 40/-

INDIA RUBBER EXPANSION JOINT PIPES & CONNECTIONS.

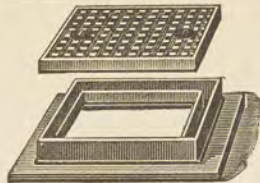
THE ONLY PERMANENTLY SOUND JOINT IN THE MARKET.
BEING A FIRM SEATING JOINT, IT CANNOT POSSIBLY GIVE WAY.

Adopted by H.M.'s War Department, Home Office, London and Country School Boards &c.

Also extensively used for Steam, Water and Gas Mains. When required for such purposes it should be so stated in Order, giving working pressure.

SOLE MAKERS—

THE MEADOW FOUNDRY Co., LTD., MANSFIELD, NOTTS, ENGLAND.



AIR-TIGHT INSPECTION COVERS
and FRAMES.

ROLLERS
of every
Description
and Price.

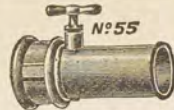


No 6



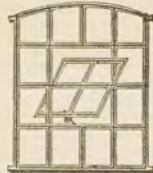
VASES and FOUNTAINS.

Great Variety.



- 2-in. .. 5/6 each
- 3-in. .. 7- " "
- 4-in. .. 8/6 " "

WINDOW



AND SIZES.

OF OVER 500 DESIGNS

Who are the First in
the Trade for Heating
Appliances, Rollers,
Seats, Vases,
Fountains, Ventilating
Gear, &c.

ASK FOR LISTS.

Makers of Cast-iron Shot, &c.

THE MEADOW FOUNDRY Co., LTD., MANSFIELD, NOTTS, ENGLAND.

MACMILLAN & Co.'s PUBLICATIONS.

- A Treatise on Ore Deposits.**—By J. ARTHUR PHILLIPS, F.R.S., V.P.G.S., F.G.S., M.Inst.C.E., Ancien Elève de l' Ecole des Mines, Paris. Second Edition. Revised and greatly enlarged by HENRY LOUIS, A.R.S.M., F.I.C., F.G.S., &c., Author of "A Handbook of Gold Milling," Professor of Mining at the Durham College of Science, Newcastle-on-Tyne. Demy 8vo. 28s.
- A Handbook of Gold-Milling.**—By H. LOUIS, Associate of the Royal School of Mines, Fellow of the Geological Society, &c. With illustrations. Cr. 8vo. 10s. net.
- The Gold Mines of the Rand.**—Being a description of the Mining Industry of Witwatersrand, South African Republic. By FREDERICK J. HATCH (Mining Engineer) and J. A. CHALMERS (Mining Engineer). With Maps, Plans, and Illustrations. Super Royal 8vo. 17s. net.
- The Mechanics of Pumping Machinery.**—A Text-book for Technical Schools, and a Guide for Practical Engineers. By DR. JULIUS WEISBACH and Professor GUSTAV HERRMANN. Authorised Translation from the Second German Edition by KARL P. DAHLSTROM, M.E., late Instructor of Mechanical Engineering at the Lehigh University. With 197 Illustrations. Medium 8vo. 12s. 6d. net.
- Colliery Surveying.**—A Primer designed for the Use of Students and Colliery Manager Aspirants. By T. A. O'DONAHUE, M.E., Editor of *Mining Engineering*. Globe 8vo. 2s. 6d.
- By ARTHUR H. HIORNS.
- Iron and Steel Manufacture.**—A Text-book for Beginners. By ARTHUR H. HIORNS, Principal, School of Metallurgy, Birmingham and Midland Institute. Globe 8vo. 3s. 6d.
- A Text-book of Elementary Metallurgy.**—For the use of Students. To which is added an Appendix of Examination Questions, embracing the whole of the Questions set in the three stages of the subject by the Science and Art Department for the past twenty years. Second Edition, completely revised. Globe 8vo. 3s. Questions.—Globe 8vo. 1s.
- Practical Metallurgy and Assaying.**—A Text-book for the use of Teachers, Students and Assayers. Second Edition. Globe 8vo. 6s.
- Mixed Metals, or Metallic Alloys.**—Globe 8vo. 6s.
- Metal Colouring and Bronzing.**—Globe 8vo. 5s.
- Principles of Metallurgy.**—Globe 8vo. 6s.

MACMILLAN & Co. Ltd., LONDON.

AIR COMPRESSORS

WITH COMPOUND AIR and STEAM CYLINDERS.

Fitted with Schram's Inlet and Outlet Valves.

GIVING THE GREATEST EFFICIENCY.

~~~~~

## SCHRAM'S IMPROVED ROCK-BORING MACHINES

2,500 in use in all parts of the World.

~~~~~

DIAMOND PROSPECTING DRILLS.

OPTIMUS COMPOUND ROCK DRILL

(P. J. OGLE'S PATENT.)

Consumes 40 per cent. less Compressed Air than any other Drill, at the same time giving the most effectual results.

~~~~~

RICHARD SCHRAM & CO.

CANNON STREET HOUSE, LONDON, E.C.

Telegrams—"SCHRAM, LONDON."

A.I., A.B.C., and The Engineering Telegraph Codes used.

---

# BICKFORD'S PATENT FUSES

---

*For use in all Blasting Operations for all Markets  
of the World.*

---

**PATENT VOLLEY-FIRERS FOR SIMULTANEOUS FIRING  
WITHOUT ELECTRICITY.**

---

**PATENT COLLIERY FUSE & SAFETY LIGHTERS  
FOR FIERY PITS.**

---

Manufactured by **BICKFORD, SMITH & Co. LTD.**  
**TUCKINGMILL, CORNWALL.**

And at St. HELENS JUNCTION, LANCASHIRE.

*London Office:* .85 GRACECHURCH STREET, E.C.

## MARSDEN'S PATENT DRY CRUSHER & PULVERIZER

SPECIALLY APPLICABLE FOR USE IN CONNEXION WITH THE

### CYANIDE PROCESS.

Will Crush to any Degree of Fineness required, and in connexion with the  
**BLAKE-MARSDEN STONEBREAKER AND ORE CRUSHER,**  
is far superior to Rolls, and is the most economical and efficient Plant extant.

*The chief advantages of this system of reduction consist in—*

**Great Saving in first Cost of Plant; Avoidance of the Formation  
of Slimes; Small Cost of Maintenance; Small Power required  
to Drive; Simplicity of Construction.**

CAN BE SEEN IN OPERATION, BY APPOINTMENT, AT THE WORKS—

**SOHO FOUNDRY, LEEDS.**

ADOPTED BY

The Afrikander Gold Mining Company; The Lisbon-Berlyn Gold Mining  
Company; The Pen-y-Bryn Lead Mining Company; The Hodbarrow Mining  
Company; Messrs. J. C. Lanyon & Co., Redruth; and many others.

*Sole Maker and Patentee of the above, and of the*

**BLAKE-MARSDEN STONEBREAKER AND ORE CRUSHER,  
H. R. MARSDEN, SOHO FOUNDRY, LEEDS.**

# THE PATENT NUT & BOLT COMPANY LTD.

LONDON WORKS, near BIRMINGHAM, England.

Manufacturers of

WROUGHT-IRON and STEEL FISH BOLTS, FANG BOLTS, SPIKES,  
RAIL SCREWS, FISH PLATES, SOLE PLATES,

and all other kinds of

RAILWAY AND TRAMWAY FASTENINGS.

CAST-IRON CHAIRS,  
CAST-IRON BOWL and PLATE SLEEPERS, WROUGHT-IRON and STEEL TIE-BARS,  
GIBS, COTTERS, COILED KEYS, WEDGES, &c.

also all descriptions of

BOLTS and NUTS, RIVETS, SET SCREWS, COACH SCREWS, WASHERS, &c.

Black, Bright, and Galvanized,

IN IRON, STEEL, COPPER, BRASS, and YELLOW METAL,

As used by Engineers, Railway Companies, Contractors, Shipbuilders,  
Carriage and Waggon Builders, Telegraph Constructors,  
Agricultural Implement Makers, and others.

BRANDS OF IRON :

"GLOBE & LION."

"BEST."

"BEST BEST."

"TREBLE BEST."

"HORSE SHOE."



BRANCH WORKS :

CWMBRAN WORKS, COLLIERIES  
and BLAST FURNACES,  
NEWPORT, MON.

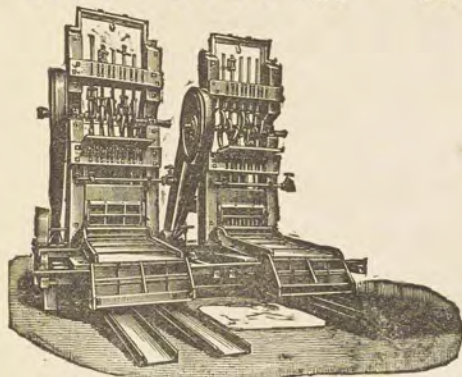
STOUR VALLEY WORKS,  
WEST BROMWICH.

LONDON OFFICE :

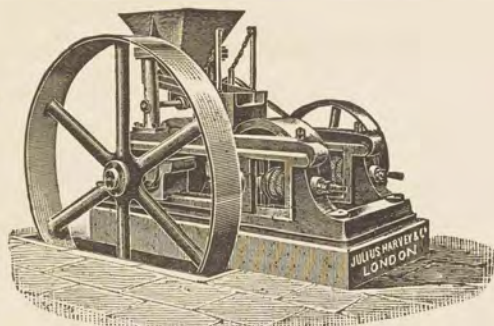
66 CANNON STREET,  
LONDON, E.O

Telegraphic Address ; "GLOBE, BIRMINGHAM,"

# MINING MACHINERY.



STAMP BATTERIES.  
SHOES AND DIES.  
QUARTZ BREAKERS.  
PUMPING MACHINERY.  
TRAMWAY MATERIAL, &c.



DRY CRUSHING ROLLS.  
SPECIAL GRINDING MILLS.  
ENGINES AND BOILERS.  
OIL AND GAS ENGINES.  
ELECTRICAL PLANT, &c.

*Machinery of every description Purchased, Inspected, and Shipped on favourable Terms.*

*Telegrams: CROSSHEAD, London.*

*Catalogues on Application.*

**JULIUS HARVEY & CO., 11 Queen Victoria Street, LONDON, E.C.**

# R. HOOD HAGGIE & SON,

MANUFACTURERS OF

HEMP, COIR, MANILLA and WIRE

ROPES,

NEWCASTLE-ON-TYNE.

*Specialities—*

MANILLA ROPES,

*Oiled and Prepared on American Principle.*

FLEXIBLE STEEL  
ROPES & CORDS.



**ALSO FLEXIBLE STEEL CRANE ROPES.**  
**SAFER and BETTER THAN CHAIN.**



STEEL WIRE  
HAULAGE & WINDING ROPES  
OF THE  
MOST APPROVED CONSTRUCTION  
AND  
**HIGHEST QUALITY.**

LONDON BRANCH—

35 LIME STREET, E.C.

Telegrams: "HAGGIE, LONDON."

Head Office: HAGGIE, NEWCASTLE-ON-TYNE.

Works: WILLINGTON-ON-TYNE.

ESTABLISHED 1789.

# FRASER & CHALMERS

LIMITED:

---

*MAKERS of MACHINERY for—*

|           |                |
|-----------|----------------|
| MINING.   | CONCENTRATING. |
| MILLING.  | SMELTING.      |
| CRUSHING. | CYANIDING.     |

---

*HIGH-CLASS ENGINES and BOILERS for—*

|          |                    |
|----------|--------------------|
| WINDING. | COMPRESSOR         |
| HAULING. | AND                |
| PUMPING. | ELECTRICAL PLANTS. |

---

WORKS—

ERITH, KENT, ENGLAND.  
CHICAGO, ILL., U.S.A.

OFFICES—

43 THREADNEEDLE STREET,  
LONDON, E.C.



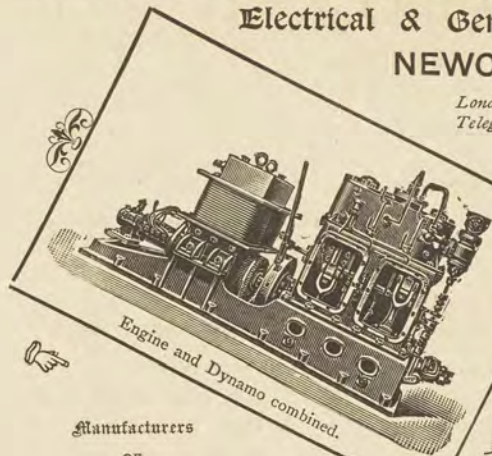
# ERNEST SCOTT & MOUNTAIN *Ld.*

Electrical & General Engineers,

NEWCASTLE-ON-TYNE, ENGLAND.

*London Office: 20 New Bridge St., Blackfriars, E.C.*

*Telegraphic Address: Esco, Newcastle-on-Tyne.*



Engine and Dynamo combined.

Manufacturers

OF

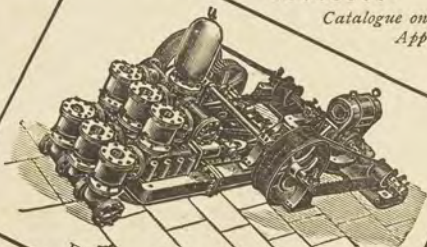
"TYNE" DYNAMOS,  
MOTORS,  
ELECTRIC & STEAM FANS & PUMPS,  
ELECTRIC LOCOMOTIVES,  
HIGH-SPEED STEAM ENGINES,  
AUXILIARY MACHINERY FOR WARSHIPS, &c.

ELECTRIC TRANSMISSION OF POWER MACHINERY.

*Contractors to H.M. and Foreign Governments.*

Electrical Plant and Machinery for  
PUMPING, HAULING, WINDING,  
DRILLING, COAL-CUTTING,  
LIGHTING, VENTILATING,  
DEPOSITING, &c., &c.

*Catalogue on  
Application.*



Electrical Pumping Plant.

# HADFIELD'S STEEL FOUNDRY Co. LTD.

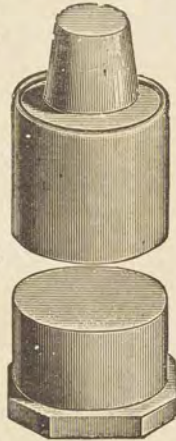
**MANGANESE STEEL  
SHOES & DIES.**

~~~~~  
MINING DRILL STEEL.
~~~~~

HAMMERS, PICKS,  
WEDGES, SHOVELS,  
SPADES.

ALL KINDS OF  
MINING REQUISITES,  
&c.

**STEEL CASTINGS OF EVERY DESCRIPTION.  
HECLA WORKS, SHEFFIELD.**



SOLE MAKERS

*(Under the Hadfield-System & Patents)*

OF

**MANGANESE STEEL,**

which is specially adapted for  
all kinds of

**CRUSHING MACHINERY**

~~~~~  
**STEEL WHEELS
AND AXLES.**
~~~~~

ROLLERS, PULLEYS,  
PEDESTALS, ROPE CLIPS,  
&c.

# RAPID & PRELIMINARY SURVEYS.

## J. H. STEWARD'S OUTFITS OF PORTABLE INSTRUMENTS,

### Suitable for TRAVELLERS and PROSPECTORS.

|                                                                                                                                                                        | £  | s. | d. |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|
| The "Steward" Telemeter, a pocket instrument for measuring distances of fixed or moving objects without calculation .. .. .                                            | 5  | 5  | 0  |
| Vernier Aneroid, reading to 5 feet, for measuring altitudes and depths, and for meteorological observations .. .. .                                                    | 8  | 8  | 0  |
| Clinometer Rule, with Compass, for measuring vertical and horizontal angles, with scales and formulæ .. .. .                                                           | 3  | 3  | 0  |
| Sight Compass for sketching, with Luminous Dial for night marching .. .. .                                                                                             | 1  | 18 | 6  |
| Dredge-Steward Omni-Telemeter, a very perfect portable instrument for rapid survey, measures distances without calculation, and vertical and horizontal angles .. .. . | 12 | 12 | 0  |
| Blakesley's Double-Sextant for rapid curve-ranging, reading angles up to 180°, and free from parallax error .. .. .                                                    | 10 | 10 | 0  |
| Shadbolt's Patent Mercurial Artificial Horizon.—Permits measurement of exceptionally small angles of altitude, and automatically removes scum .. .. .                  | 5  | 5  | 0  |

Francis' Combination Surveying Instrument, Comprising Sight Compass, Telescope Level, Clinometer, Hanging Compass, Plane Table, Alidade, &c.

Travellers' Thermometers, Sextants, Prismatic Compasses, Portable Plane Tables, Theodolites, Sundials, Drawing Instruments, Field Glasses, Reconnoitring Telescopes, Chronometers, Photographic Apparatus.

PARTICULARS FREE ON APPLICATION.

1. Opera and Field Glasses and Telescopes.
2. Meteorological Instruments.
3. Microscopes and Apparatus.
4. Mathematical and Surveying Instruments.
5. Magic Lanterns and Apparatus.

CATALOGUE PUBLISHED IN SEPARATE PARTS.

6. Lantern Transparencies.
7. Spectacles and Eyeglasses.
8. Military Instruments and Rifle Requisites.
9. Photographic Apparatus.

*Any of above parts sent post free, gratis.*

## J. H. STEWARD,

OPTICIAN TO THE BRITISH & FOREIGN GOVERNMENTS,

406 STRAND; 457 WEST STRAND; 7 GRACECHURCH STREET, LONDON. } }

# The Mining Journal.

(Established 1835.)

## ANNUAL SUBSCRIPTION:

|                       |        |        |
|-----------------------|--------|--------|
| UNITED KINGDOM ... .. | £1 4 0 | } Post |
| ABROAD ... ..         | 1 8 0  | } Free |

The *Mining Journal* advocates the interest of the Mining and Metallurgical industries at home and abroad, and has an *exclusive reputation* for its Special Correspondence from all the Mining Districts of the World, and also for its Prices Current of Metals, which are bought and sold in all parts of the Globe upon the basis of the "Next Published MINING JOURNAL Prices."

## THE MINING JOURNAL,

*The oldest, best, most widely circulated and influential  
Mining Paper in the World.*

**18 FINCH LANE, LONDON, E.C.**

H

## INDEX TO ADVERTISERS.

|                                                      | PAGE  |
|------------------------------------------------------|-------|
| Longridge, C. C. ... ..                              | i     |
| Kerr, Stuart & Co. Limited ... ..                    | ii    |
| Evans, Joseph, & Sons ... ..                         | iii   |
| Spon, E. & F. N. ... ..                              | iv    |
| Ingersoll-Sergeant Drill Co. ... ..                  | v     |
| Osborn, Samuel, & Co. ... ..                         | vi    |
| Sandycroft Foundry & Engine Works Co. Limited ... .. | vii   |
| Charleton's Report Book for Mining Engineers ... ..  | viii  |
| Davis, John, & Sons... ..                            | ix    |
| Meadow Foundry Co. Limited ... ..                    | x, xi |
| Macmillan & Co. ... ..                               | xii   |
| Schram, Richard, & Co. ... ..                        | xiii  |
| Bickford, Smith & Co. Limited ... ..                 | xiv   |
| Marsden, R. ... ..                                   | xv    |
| Patent Nut & Bolt Co. Limited ... ..                 | xvi   |
| Harvey, Julius, & Co. ... ..                         | xvii  |
| Haggie, R. Hood, & Son ... ..                        | xviii |
| Fraser & Chalmers Limited ... ..                     | xix   |
| Ernest Scott & Mountain Limited... ..                | xx    |
| Hadfield's Steel Foundry Co. Limited ... ..          | xxi   |
| Steward, J. H. ... ..                                | xxii  |
| "Mining Journal" ... ..                              | xxiii |



