

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

I N D E X.

A.

	Page
Aberthaw lime, contents of, <i>note</i>	22
lime-stone, properties of, <i>note</i>	70
nature of its residuum, <i>note</i>	151
Absorption of carbonic acid of the atmosphere by lime ex- posed to the air, art. 70—74.....	30, 31
of water by the Grecian pavements, art. 271.....	117
by rich lime, quantities of	168
experiments on the absorption of carbonic acid by mortars	172
the opinion that oxygen is absorbed by pouzzolanas during the process of calcination not sufficiently established ...	183
absorbent property possessed by clays calcined in con- tact with the air, after cooling	188, 189
Achard, M., theory of the solidification of mortars, art. 285...	124
Acids, action of, on the materials used in the composition of mortar, art. 135—140	54, 55
See <i>Carbonic acid, Muriatic acid, Nitric acid, Sulphuric acid.</i>	
Adherence and cohesion, examination of the theory of, art. 290—314.....	126—139
experiments to ascertain the cause of cohesion in pastes, <i>note</i>	127
definition of “adherence,” art. 293	128
Age required for mortars to resist the effects of frost, art. 250, 251	104
“Aggregates,” four remarkable cases presented by the theory of, art. 295	129
probable theoretical consequences of the first case, art. 296	129
of the second, art. 302.....	131
of the third, art. 304	131
of the fourth, art. 306	131
Air, deterioration of lime by the action of, art. 60	27
influence of the contact of, in the manufacture of pouzzo- lanas, art. 152.	61, 183

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

258	INDEX.	Page
Air.—Mortars, or cements, capable of acquiring great hardness		
in the open air, art. 163		65
of mortars constantly exposed to the air and weather, art. 207—237		84—97
what limes are benefited or injured by such exposure, art. 225		92
Air-furnace, description of, <i>note</i>		186
“Albaria Opera” of the Romans, notice of		175
Alberti, L. B., on the use of oil in ancient mortars, <i>note</i>		121
on the preservation of lime		169
Alcohol, effect of, in a paste of slaked rich lime, <i>note</i>		127
Alexandria, in Piedmont, manufacture of prisms at		207, 208
Alumina, nature of, <i>note b.</i>		1
action of lime on, in the humid way		184
Antique mortars, reason for their superior durability, <i>note b.</i>		65
compared with those of medium age and modern mortars, art. 268—283.....		114—123
result of M. John’s analysis of		124, 125
analysis of various specimens, <i>note</i>		174, 175
hardness of,.....		202, 225
<i>See Egypt, Greece, Romans.</i>		
Aqua fortis cement, composition of, art. 160		63
comparison of various artificial pouzzolanas with the Italian pouzzolana, Audenack tarras and aquafortis cement		242
Aqueducts, mortar used by the Romans for the lining of, art. 277		119
Aqueous vapour. <i>See Vapour.</i>		
Architecture, notice of Greek and Roman writers on, art. 272		118
Arènes, nature of, art. 109, 110		46
clay of, how acted upon by muriatic acid, art. 136		55
deprive lime-water of its causticity, art. 141		56
account of the use of as pouzzolanas		177
mixed with lime, form a good mortar for repairing sub- aqueous works		177
in their natural state, act as pouzzolanas with rich limes		178
<i>See Girard.</i>		
Argillaceous particles in fine sands, injurious effects of, art 214		89, 203
lime-stones, difficulty of calcining argillaceous lime-stones by slow heat, art. 41		17
extensive use of, art. 266.....		113

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

INDEX.	259
	Page
Argillaceous lime-stones, kilns for the burning of	159, 160
substances, proportions of cements prepared	
from	242
Artificial hydraulic lime. See <i>Hydraulic lime</i> .	
Artificial marble. See <i>Marble</i> .	
Artificial pouzzolanas. See <i>Pouzzolanas</i> .	
Artificial products analogous to pouzzolanas, art. 124.....	49
Artificial stone. See <i>Stone</i> .	
Arts, use that may be made of the hydrates of lime in, art. 99	42
Atmosphere. See <i>Air, Carbonic acid</i> .	
Audenack tarras. See <i>Tarras</i> .	
Avril, M., discovery of the hydraulic properties of psammites	
by	177
B.	
Ballast, used in the manufacture of "concrete," <i>note</i>	100
Bastile, result of an analysis of mortars found at the destruc-	
tion of, art. 285	124
Baye cement, analysis of	222
Beating, when useless, art. 99	41
when it should be employed repeatedly, <i>note f.</i>	71
when a "beton" may be beaten up afresh, art. 199	79
influence of, on the resistance of mortars in general, art.	
253—260	106—110
may be applied to mortar contained in a mould, art. 254, p. 106	
how applied with effect, art. 255	106
different effects of, on various mortars, art. 256	107, 108
process of, used by the Romans, art. 277	119
Belidor, simplification of the box proposed by, art. 192	76
Berthier, M., his method of analysing lime-stone	143
experiments by	150
his objections to the theory of Guyton Morveau, art. 286, p. 125	
his explanation of the solidification of hydraulic cements,	
art. 313	137
"Beton," composition of, <i>note b.</i>	20. art. 165, p. 67
extensive use of, in France, art. 46	20, 161, 162
hydraulic mortars may be employed in masses of, art.	
100	42, 198
how its immersion is carried on, art. 193	76
should not be beaten when immersed, art. 196	77
ought not to be used while warm, art. 197	78
when it may be beaten up afresh, art. 199	79

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

260	INDEX.	Page
“Beton,” sometimes supplanted by masonry, art. 200		80
Lyonese method of making		198
Bezoarah, notice of a mineral brought from, <i>note</i>		222
an excellent cement from, <i>note</i>		222
Biscuit, porous, experiment with broken fragments of, mixed with lime, <i>note</i>		59
Black, Dr., his theory of the solidification of mortars, art. 285, p. 124		
Bone-ash, deprives lime-water of its causticity, <i>note</i>		56
Boulogne stone, analysis of		221
Box.—Simplification of the box proposed by Belidor, art. 192, p. 76		
Brard, M., method proposed by, to distinguish substances liable to be affected by frost		216—218
Breccia, meaning of the term, <i>note d.</i>		46
Bricks, number of, stuck together by Roman cement and pro- jecting at right angles from the side of a wall, <i>note</i>		111
employed unburnt in building by the Egyptians, art. 270, p. 117		
fragments of, used by the Romans in their mortars, art. 276		119
always apparent in them, art. 279		121
experiments on, moistened with the solutions of the sub- carbonate of potash.....		189, 190
value of M. Brard’s process to discover if they are likely to be affected by frost		218
Brick-work constructed with Parker’s and Mulgrave’s ce- ments, the superficial weight it will bear, <i>note f.</i>		123
Bridge of Charles X. at Lyons, methods of fabrication and immersion of mortar, for the foundations of		197
Bridges, effect observed under the arches of, <i>note e.</i>		38
process of the Romans in laying the foundations of, art. 274		119
artificial hydraulic lime used for the foundations of, art. 46		20. 161, 162
Bruyère, M., experiments upon artificial pouzzolanas		187
Builders, guide for, in the choice of lime-stone, art. 4		3
opinions of, as to the efficacy of oxide of iron, in- validated by facts		183
Burgundy Canal, materials used in the works connected with, art. 266.....		113, 156
Burning. See <i>Calcination.</i>		
“Burnt stucco,” explanation of the term		226
C.		
Calcareous incrustations, observations upon some		224

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

INDEX.

261

	Page
Calcareous minerals and the limes they furnish, art. 1—24. 1—12	
tests to discover, art. 1.....	1
what proportion of clay in, renders them unfit to be converted into lime, art. 261	111
history of.....	142, 143
analysis of.....	146
sands, nature of, art. 105	44
See <i>Sands</i> .	
Calcination of lime-stone in the large way, art. 25. 45, p. 13—19	
conditions to render it as easy as possible, art. 26—31, p. 13—15	
different kilns made use of, art. 32—38.	15, 16
time required for, art. 40	17
average quantity of combustibles required for the com- bustion of a cubic metre of lime, art. 40.	17
difficult calcination of argillaceous lime-stones by slow heat, art. 41	17
irregular action of the coal-kiln by slow heat, art. 41, 42.....	17, 18, 159
influence of a slight calcination in the manufacture of artificial pouzzolanas, art. 151	61
effects of, on compound lime-stones.	150—152
influence of aqueous vapour on.....	153
fact relative to calcination in a close vessel.....	153
consequence of the imperfect burning of lime-stones; contradictory experiments on the subject.....	154
experiments upon the different quantities of combustibles used in.....	157
improvement which takes place in the burning of lime with coal, by very slight modifications in the manage- ment of the fire and the distribution of the combustible.	158
by kilns with alternating fires for the burning of argilla- ceous lime-stone; manner of using them.....	159
reverberatory furnace proposed for the calcination of pouzzolanas.....	186
Calcined sulphate of lime. See <i>Plaster of Paris</i> .	
Canals, the artificial limes used in, art. 46.....	20
materials used in works connected with, art. 266....	113, 161
kilns employed to burn lime for.....	157, 158
“Cancars” importance of this class of Indian calcareous mi- nerals, <i>note</i>	12
Carbonate of lime, dissolved by water containing carbonic acid, <i>note e</i>	38
of magnesia, extensive beds of, found in the south of India	147

	Page
Carbonate of magnesia, found to be valuable as a cement.....,	147
analysis of	148
its use as a stucco	148
experiments upon, after calcination...	149
effects of different processes on. 153,	154
Carbonic acid, nature of, <i>note a</i>	1
re-absorbed by lime exposed to the air, art. 70	30
time required for this, in rich and hydraulic limes, art. 70.	30
proportion of, in lime, art. 70	30
its effects on hydrates of lime, art. 82—86.....	35—38
in the atmosphere, increases the hardness of certain	
bodies, art. 86, par. 2.....	38
augments the hardness of hydraulic limes, art. 86, par. 4.	38
the solidification of mortars attributed to the slow and	
successive action of the carbonic acid of the at-	
mosphere, art. 285	124
this opinion controverted, art. 285, 286	125
defended, as to mortars which do not “set,” <i>note</i>	125
experiments on the absorption of, by mortars.....	172
table of the depth of penetration of, into different mor-	
tars, after exposure to the air for various periods	173
proportion of, in small pieces of hydrate of lime exposed	
to the air for 8 years.....	174
quantity of, in various old cements.....	175
in cement between 3 and 4,000 years old, <i>note</i>	175
Caskets and snuff-boxes made by the Italians, of the same	
material as the ancient Roman cement, art. 278.....	120
Casts. See <i>Moulding</i> .	
Cements.—An excellent water-cement, <i>note t</i>	11
commonly used in England unslaked, <i>note</i>	22
contents of various, <i>note</i>	22
directions for producing a cement similar to the Roman,	
<i>note d</i>	23
matters improperly so called by builders how obtained,	
art. 157.....	62
composition of aquafortis cement, art. 160.	63
the goodness of, not always indicated by the rapidity of	
the “set,” art. 205.	82
an excess of rich or slightly hydraulic lime in a cement	
retards its “set,” par. 1.	83
what modes of “extinction” are best calculated to hasten	
the “set,” par. 2.	83
continuance of the progress of certain cements, par. 3...	83

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

INDEX.	263
	Page
Cements—the relations in respect to “hardness” deduced from comparison of the three modes of slaking, how modified by time, par. 5.	83
subject to the constant influence of a damp soil, art. 238—242.....	98—101
intended for under-ground masonry, how they are to be used, art. 242.....	99
method of augmenting their “adherence,” art. 242.	99
of the vicissitudes to which they may be exposed, and the consequences, art. 243—252.....	102—105
of rich lime with “inert” sands, become decomposed in the water, art. 247.	103
of rich limes, resist frosts but imperfectly, art. 248.	103
cause of the speedy decay of, in India, <i>note</i>	103
<i>Of natural cements</i> , art. 261—267.....	111—113
when calcareous minerals furnish a natural cement, art. 261.....	111
difference in the “set” of, art. 262.....	111
defects in, art. 262.	111
adhesion of such as dry in the open air, <i>note</i>	111
proof of the excellence of Roman cement, <i>note</i>	111
great consumption of, in London, art. 263.....	112
recently found in Russia and France, art. 264.	112
cements known 2,000 years ago, art. 268.	115
how employed by the Egyptians, art. 269.	116
by the Greeks, art. 271.....	117
by the Romans, art. 277.	119, 120
table extracted from the analysis of various cements, showing the relative proportions of lime, sand, and carbonic acid contained by them, <i>note</i>	137
analysis of the Baye cement.....	222
of a cement used in the Madras Presidency, <i>note</i>	222
comparison of the qualities of hydraulic cements with the behaviour of their ingredients, in regard to muriatic acid.	240, 241
See <i>Hydraulic lime, Lime, Mortars, Pouzzolanas, Stucco, Water cements</i> .	
Chalk mortars, injurious to keep them in a damp state, <i>note</i> g.	95
Chaptal, Count, discovery of the unequal manner in which pouzzolanas behave in respect to sulphuric acid....	179, 180
result of his experiments on the ochreous clays of Languedoc.....	182
“Chaux carbonatée saccharoide,” nature of, <i>note</i> e.	2

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

264	INDEX.	Page
Chemical affinity, opinion that it may act a part in the solidification of good mortars, art. 286.....		125
this opinion controverted, art. 286.....		125
its importance in hardening mortars, <i>note</i>		132
has no effect in the setting of plaster of Paris, and other cements, <i>note</i>		132, 133
opinion that lime in cements of natural or artificial pouzzolanas, as well as in cements formed with the uncalcined psammites and arenas, enters into chemical combination with these substances, art. 314.		138, 185
this opinion confirmed by experiments, <i>note</i>		138, 139
and by the observations of General Treussart, <i>note</i>		139
Chemical analyses, mode of reducing the results of, into technical language, <i>note</i>		210, 211
Chemical combination. See <i>Chemical affinity</i> .		
Chemical comparison of various old mortars.....		210
Chemical constitution of the various limes, art. 21		9
Chemical equivalent, <i>note c</i>		14
Chemical methods of recognizing the ingredients of mortars, art. 141—143		56, 57
of appreciating the qualities of lime-stone.....		143
Cheops, Pyramid of, the mortar found there similar to the present, art. 268		114
analysis of it.....		114—116, <i>note</i> ; 175, <i>note</i> ; 222—224
Chill, effect of, in slaking lime, art. 59		27
Chunam, Madras, mode of preparing this stucco, <i>note x</i>		176
Cinders of coal and turf, sometimes form an “energetic” pouzzolana, art. 153		63
but they are sometimes “inert,” art. 153		63
Cisterns, mortar used by the Romans for the lining of, art. 277		119
Clays.—Basis of plastic clays, <i>note b</i>		1
best kind for preparing artificial lime, art. 51		22
nature and classification of, art. 113—117		47, 48
notice of a useful clay, <i>note a</i>		53
action of muriatic acid on, art. 138		55
deprive lime-water of its causticity, art. 141		56
will produce “a very energetic” pouzzolana, art. 153, and <i>note</i>		61
what proportion of, in calcareous minerals, prevents them from being converted into lime by calcination, art. 261, p.		111
criterion to discover the proper proportions of, in lime-stone		144

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

INDEX.	265
	Page
Clays.—A mistake that clays are more easily acted upon by acids when in their natural state, than after any degree of calcination	180
result of experiments on ochreous clays.....	182
phenomenon observed in clays calcined in powder on metallic plates heated to redness	183
effect produced by mixing clay and lime, when each is in a state of pulp	185
on the conversion of, into artificial pouzzolanas	187
experiment to prove that clays calcined in contact with the air do not absorb any gas	187
when calcined in a close vessel, not acted upon by acids to the same degree as those calcined in the air	188
when calcined in contact with the air possess, after cooling, an absorbent property	188, 189
research into the influence of the admixture of pure potash or soda with the clays previous to their calcination, in reference to the energy of the artificial pouzzolanas produced ..	189, 190
table of facts observed in reference to cements prepared from two kinds of clay, calcined in different ways.....	189
experiments with bricks of, moistened with solutions of the sub-carbonate of potash	189, 190
fatal influence of, in mortars exposed to the weather ...	203
account of various experiments with Rajahmundry clay.....	226—228
comparison of the action of muriatic acid upon clays taken in different conditions	239
Coal, bulk of, burnt to produce a given quantity of lime, art. 44	18
refuse of the combustion of, used as an ingredient in mortar, art. 124	50
Coal-dust, its use in cements, <i>note k</i>	154
Coating used to guard the cement of the Eddystone light-house, <i>note k</i>	77
Cohesion of pastes, experiments to ascertain the cause of, <i>note</i> . <i>See Adherence.</i>	127
Colours of the various limes, art. 19.....	8. 145
of the Roman mortars, art. 276	119
results of experiments as to the colour of limes, <i>note e</i> . a clearer colour produced by the ordinary mode of extinction in certain cases	146
effects of different modes of extinction	169

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

266	INDEX.	Page
Combination of materials necessary to produce mortars or cements capable of acquiring great hardness in damp situations, art. 162.		64
of calcareous mortars and cements subjected to the constant influence of a damp soil, art. 238—242 ...		98—101
Combustibles. See <i>Fuel</i> .		
Compositions for the protection of stucco from the weather....		212
Compounds, comparison of the resistances of various compounds in regard to proportions and the size of the bodies imbedded in the substance constituting the matrix		255
“Concrete,” meaning of the term, <i>note b</i>		20
general use of in England as a substratum for dangerous soils, <i>note</i>		100
nature and preparation of, <i>note</i>		100
composition of the “concrete” used in and near London, <i>note</i>		100
notice of Mr. Godwin’s Essay on, <i>note</i>		100
Condensation, the absolute resistance of various mortars compared in regard to the effect of		253
Consistency of paste of hydraulic lime when immersed, art. 11		6
of good mortar, <i>note c</i>		35
importance of a good consistency, whether in mortars or cements, art. 182.....		72
effects of too thin a consistency on mortar when exposed to the air, <i>note</i>		75
the degree of, requisite in any material that it may be beaten with effect, art. 255		106
comparison of the relative resistances of various hydraulic mortars and cements, immersed in various states of consistency.....		246
mortars compared with regard to the consistency given to the mixture of lime and sand		252
Crystallization of metallic mirrors after solidification, <i>note m</i>		133
Crystals, found in ancient Egyptian mortar, <i>note</i>		114, 115

D.

Dalton, Dr., his opinion that a current of aqueous vapour accelerates the reduction of limestone into lime	152, 153
this confirmed by an experiment of M. Gay-Lussac, <i>note</i>	153
successful application of this principle by Lord Stanhope	153

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

INDEX.	267
	Page
Damp.—Process of extinction for mortars exposed to a damp soil, art. 240.....	98
effect produced by removal on cements from a damp situation to a dry one.....	212
Darcet, M., result of his analysis of mortars found on the demolition of the Bastile, art. 285	124
Dead lime, how distinguished from the unburnt limes, <i>note b.</i>	14
Desiccation, rapid, bad effects of, upon mortars, art. 234.....	95
remedy for, art. 234, p. 295, <i>note g.</i>	96
what mortars best adapted to resist, <i>note g.</i>	96
influence of slow desiccation on mortars, long known in Italy.....	207
how applied in the fabrication of artificial stones	207
experiments on	208
mortars compared in regard to the influence of...	252
process for accelerating, adopted by the Romans, art. 277.....	120
Deterioration of lime by the action of the air, art. 60	27
of mortars by the vicissitudes of the weather, art. 243—251	102—105
explanation of the deterioration of some water cements and mortars	199
observations upon certain cases of deterioration of cements removed from a damp situation to a dry one	212
of the vertical plasters of pouzzolanas in Italy	213
hydraulic mortars and cements compared with respect to the deterioration which they undergo at their surfaces.	247
Dolomites, useful as cements, <i>note t.</i>	11
Doué, methods used at, for slaking hydraulic lime on a large scale	170
Dross, and slag, from large furnaces, afford but “ feebly energetic ” pouzzolana, art. 159	63
Drowned mortar, cause of the bad qualities of	205
Drying, precautions in respect to, art. 229, 230	93, 94
See <i>Desiccation.</i>	
Dutch Tarras, account of the nature and properties of, <i>note</i>	178—180
See <i>Tarras.</i>	
E.	
Earthenware, pounded, used as an ingredient in cements, art. 124	50

268	INDEX.	Page
Economy in ornamental constructions by the use of hydraulic limes, art. 259.....		109, 110
Eddystone Lighthouse, coating used to guard the cement of, <i>note k</i>		77
Eggs, whites of, used in India, in the manufacture of stucco, <i>note x</i>		176
Egypt, the most ancient use of lime in buildings there, art. 268, p. 114		
the mortar in the pyramid of Cheops similar to the present, art. 268		114
analysis of it, <i>note</i>		114—116
a composition of rich lime and coarsely pounded gypsum, <i>note</i>		115
mortar employed in, greatly superior in durability to that of the Romans, art. 269.....		116
ancient mode of employing cements in, art. 269.....		116
method of building with bricks in, art. 270		117
“Energetic.”—Application of the terms “very energetic,” “energetic,” and “feebly energetic,” to substances used in the formation of mortar, art. 127—132.....		52, 53
properties of substances so distinguished par. 2, 3.....		57
Equivalent, chemical, <i>note c</i>		14
Experiments, account of the manner in which the experiments that form the basis of the tables were made.....		234—236
Extinction, order of pre-eminence of the three modes of, for hydrates of lime, art. 95		40
choice of the process of, art. 173—177		69—71
of the processes of, for different limes, art. 174		70
spontaneous, influence of, art. 177.....		70
important caution respecting, <i>note e</i>		71
order of the three processes, for mortars exposed to the air and weather, art. 222		91
process of, for mortars exposed to a damp soil, art. 240... ..		98
value of M. Lafaye’s process		168
effects on colour by different modes of		169
by immersion, not a difficult operation		170
method employed by MM. Ollivier		170
difference between the first and third modes of		196
See <i>Expansion, Immersion, Staking, Vapour</i> .		
F.		
Faraday, Dr., experiment by, <i>note</i>		153

INDEX.	269
	Page
Felspar, nature of, <i>note c.</i>	46
Fish-ponds, mortar used by the Romans for the lining of, art. 277	119
analysis of mortar from an ancient fish-pond near Gre- noble	224
Fleuret, M., examination of his process of slaking.....	167
Forge-scales, powdered, used as an ingredient in mortar, <i>note</i>	50
Fossil sands, nature of, art. 107—109.....	45, 46
See <i>Sand</i> .	
Foundations, artificial, hydraulic lime used for, in France, art. 46	20
the use of “concrete” in, highly advantageous, <i>note</i>	100
process of the Romans in laying, art. 274	119
Frost.—Combination of materials necessary to produce mortars or cements capable of resisting severe frosts, art. 163... 65	
all cements of rich limes resist frosts but imperfectly, art. 248	103
how the action of, may be weakened or avoided, art. 248.	103
proportion of ingredients in mortars which renders them liable to the attacks of frost, par. 1—3	104
age required to enable mortars to resist the effects of, art. 250, 251	104
effects of, upon mortars and cements, and difficulty of explaining them	213—215
usual mode of experiment	216
method proposed by M. Brard to distinguish substances liable to be affected by frost.....	216
application of that method to various mortars.....	216, 217
M. Brard’s process useful in establishing the relative qualities of cements or mortars	218
Fuel, diminished consumption of, by M. Lacordaire’s method of preparing hydraulic lime.....	156
proportions of, required for different kilns	157, 158
Furnace, reverberatory, defects of	186, 187
description of an air furnace, <i>note</i>	186
G.	
Gas. See <i>Vapour</i> .	
Gay-Lussac, M., experiment respecting the effect of aqueous vapour in the burning of lime-stone, <i>note</i>	153
Geode, meaning of the term, <i>note h</i>	2
Girard, M., remarks upon his “Notice sur des nouveaux Mortiers hydrauliques”	228

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

270	INDEX.	Page
Girard, M., his opinions respecting hydraulic mortars composed with arenaceous sands, controverted.....		228—231
Godwin, Mr., notice of his essay on “Concrete,” <i>note</i>		100
Gravel, how the voids in are filled up, <i>note</i>		87
to ascertain proportions for mixing, <i>note</i>		88
Greece.—Cements applied by the Greeks to various uses unknown to the Egyptians, art. 271		117
excellence of their terraced roofs and walls, art. 271		117
perfection of their artificial pavements, which quickly absorbed all the water with which they were washed, art. 271		117
Grey-wacke. See <i>Psammites</i> .		
“Grossière calcaire,” nature of; the houses at Paris built with this material, <i>note</i> f.		2
Grouting, Col. Raucourt’s liquid mortar for, <i>note</i>		109
Mr. Smeaton’s, <i>note</i>		109
Guyton-Morveau, inference to be drawn from his experiments as to the effect of chemical affinity in the solidification of mortars, art. 286		125
Gypsum, finely pounded, and mixed with a composition of rich lime, the material of the ancient Egyptian mortar, <i>note</i>		115
a new cement composed of gypsum and a solution of sulphate of potash		191

H.

Hardness of mortars, variation in, art. 84	36
augmented by the carbonic acid in the atmosphere, art. 86, par. 4	38
how influenced by the method of extinction, art. 95	40
combination necessary to produce mortars or cements capable of acquiring great hardness in the water, under ground, or in damp situations, art. 162	64
ditto to acquire hardness in the open air, and to resist rain, heat, and severe frosts, art. 163	65
various proportions leading to the greatest degree of, art. 166, 176.....	67. 70
relative degrees of, in different mortars, art. 213.....	88
mortars which do not “set” much improved in, by reunion with carbonic acid, <i>note</i>	125
substances capable of acquiring considerable hardness with one fluid, are altogether void of it, with another, <i>note</i> ...	127

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

	INDEX.	271
		Page
Hardness of ancient mortars.....	202.	225
remarkable instance of the time which mortar of rich lime requires to harden.....		209
comparison of the hardness and absolute resistance of compounds resulting from the union of water with various limes		238
quickness of "set" of various cements, compared with the proportions and the hardness acquired after a year's immersion		248
See <i>Solidification</i> .		
Harwich cement, analysis of, <i>note</i>		22
"Hawk," or pallet of plasterers, use of, <i>note f.</i>		95
Heat of the weather.—Combination of materials necessary to produce mortars or cements capable of resisting, art. 163.		65
Higgins, Mr., composition of his patent stucco, <i>note e.</i>		89
theory of the solidification of mortars, art. 285.....		124
result of his experiment on the calcination of lime-stone, <i>note l.</i>		154
Hydrated sub-carbonate of lime, how formed, <i>note</i>		156
Hydrates of lime.—Chemical definition of a hydrate, and com- ponent parts of a hydrate of lime, <i>note a.</i>		34
account of, art. 79—100		34—42
influence of water on, art. 80		34
influence of the degree of consistency given to the hy- drate in the first instance, art. 81		34
action of the air on, art. 82—86.....		35—38
mode of exhibiting this action, art. 82		35
variation in the hardness acquired by, art. 84.....		36
action of water on, art. 87—100.....		38—42
hydrates of rich limes, not of any great benefit, art. 98...		41
use that may be made of the hydrates in the arts, art. 99.		42
results from a comparison of the mortars with, art. 208...		85
how a hydrate of lime may be obtained, in different condi- tions		171
analysis of small pieces of, exposed to the air for eight years		173, 174
importance of their density.....		196
comparison of the hardness and absolute resistance of compounds resulting from the union of water with va- rious limes		238
the absolute resistances of mortars compared with those of the hydrates of lime constituting their gangues		249
See <i>Lime</i> .		

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

272	INDEX.	Page
Hydration, method of analysing magnesian limestones by.....		146
Hydraulic cements. See <i>Cements, Hydraulic Lime, Lime, Mortars.</i>		
Hydraulic lime, artificial, extensively used in France, art. 46, p. 20 employed in the fabrication of the "beton," for the found- ation of bridges, art. 46.....		20
two methods of preparing, art. 48—51		21, 22
comparison between the artificial hydraulic limes and the water cements used in England, <i>note d.</i>		21—23
description of the process of manufacturing followed by M. St. Leger at Paris, art. 52—54.....		22—24
average price of, art. 55		25
history of		150
examples of the use of		161
details of the manufacture on a large scale, with the price of the materials and workmanship		164—166
See <i>Cements, Lime, Mortars.</i>		
Hydraulic mortars. See <i>Cements, Hydrates, Mortars.</i>		
Hydro-oxygen blow-pipe, <i>note a.</i>		13

I.

Immersion of hydraulic lime, mode of, in the small way, for experiment, art. 12		6
slaking by, art. 61		27
sudden, prejudicial to rich and hydraulic limes, art. 75 ...		31
different effects of, on hydrates in the condition of soft and stiff paste, art. 96		40
when it may be used with impunity, art. 97		40
case of constant immersion, compositions for, art. 162 ...		64
calcareous mortars, or cements, intended for, art. 165— 206		67—83
of "beton" how carried on, art. 193		76
method of, proposed by General Treussart, <i>note l.</i>		77
See <i>Extinction.</i>		
Incrustations, remarks upon some		224
India, cause of the speedy decay of mortars and cements in, <i>note, p. 103</i>		<i>note, 213</i>
preventive for, <i>note.</i>		103
nature of the plaster used in		176
analysis of different old mortars found in		256
See <i>Carbonate of magnesia, Chunam, Madras, Masulipatam.</i>		

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

INDEX.	273
	Page
Induration. See <i>Hardness</i> .	
“ Inert,” explanation of the term, art. 130.....	53
properties of substances so called, par. 1.....	57
Ingredients.—Account of the various ingredients which unite with lime in the preparation of calcareous mortars, or cements, art. 101—126	43—51
mutual suitableness of, art. 161—164	64—66
qualities of, art. 127—143	52—57
Interlacement, hypothesis of, considered, art. 289	126
Iron, oxide of, deprives lime-water of its causticity, <i>note c</i>	56
its effect on the colour of lime	145
the presence of, not indispensable in “ energetic ” pouzzo- lanas	183
oxide of, its efficacy invalidated by facts	183
protoxide and peroxide of, <i>note b</i>	55
scales of, used as an ingredient in mortar, <i>note</i>	50
Iron-stone, siftings of, used as an ingredient in mortar, <i>note</i>	50
Italy, the caskets and snuff-boxes made there, of the same material as the ancient Roman cement, art. 278	120
See <i>Romans</i> .	
J.	
Jaghery, meaning of the term, <i>note</i>	84
See <i>Sugar</i> .	
John, M., result of his analysis of old mortars, art. 285, 286.	124, 125
remark upon an assertion of, as to the hardening of lime, art. 312	136, 137
his discovery of the impotency of the most caustic lime on quartz	180
K.	
Kilns, various kinds of, art. 32	15
irregular action of the coal kiln by slow heat, art. 41, 42.	p. 17, 18, 159
best forms of, art. 43	18
quantity of coal consumed in, art. 44.....	18
adapted to the calcination of artificial pouzzolanas, art. 152, p. 61	
account of different kilns, with the quantity of fuel con- sumed by each	157, 158

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

274

INDEX.

	Page
Kilns.—Remarks on the coal kilns at Paris.	158, 159
with alternating fires, for the burning of argillaceous lime- stone	159, 160
disadvantages of the flame kilns	159
description of one proposed by the author	159—161

L.

Lacordaire, M., his successful application of certain experi- ments on limestones, in the works connected with the Burgundy Canal, art. 266	113, 156
Lafaye, M. de, notice of his process of “extinction”	167
Le Sage, M., account of his <i>plâtre cement</i>	220, 221
compared with the cement of Messrs. Parker and Wyatt	221
Lime.—Classification of the different varieties of limes, art. 13.	6
nature and properties of the “rich” limes, art. 14	6
of the “poor” limes, art. 15	7
of the moderately hydraulic limes, art. 16	7
of the hydraulic limes, art. 17	8
of the eminently hydraulic limes, art. 18.....	8
of the colours of these limes, art. 19	8
When lime may be said to “set,” art. 20	9
relation between the qualities of limes, and the chemical composition of the stones whence they are derived, art. 21—24	9—12
sub-carbonate of, art. 30	14
dead-lime, as distinguished from the unburnt limes, <i>note b.</i>	14
observations on kilns for the burning of, art. 32, 42—44.15—18	15—18
account of the manufactory of artificial lime at Meudon, art. 52—54	22—24
ordinary process of slaking, art. 56	26
by immersion, art. 61	27
spontaneous method, art. 66.....	29
specific gravity of, when pure, <i>note a.</i>	26
effect of cold water upon rich lime, in effervescence, art. 59	27
observation on the effect of mechanical subdivision on, <i>note c.</i>	29
exposed to the air, re-absorbs carbonic acid, art. 70	30
time required for this in rich and hydraulic limes, art. 70	30
changes which take place in lime slaked by immersion, art. 71—74	31
a sudden immersion prejudicial to rich and hydraulic limes, art. 75	31

INDEX.	275
	Page
Lime, mode of preserving, art. 76—78.....	32, 33
properties of certain rich limes, art. 86	37
of hydraulic limes, art. 86, par. 3.....	38
hydrates of, augmented in hardness by the carbonic acid of the atmosphere, art. 86, par. 4	38
experiment to shew the absorbent power of fresh slaked, <i>note f.</i>	42
when hydraulic lime may be immersed, art. 97	40
small slabs similar to marble may be made with the rich and white limes, art. 99	42
experience the best guide in the choice of limes, art. 134.	54
reciprocal suitableness of the various kinds of lime, and the ingredients which unite with it in the composition of mortars and cements, art. 161—164	64—66
on the mixture of the different limes with the other in- gredients of mortars and cements	67
what materials have the least affinity for lime, art. 167...	68
when it is better to err from a deficiency than an excess of lime, and <i>vice versá</i> , art. 170	68
a considerable excess proper in common mortars, <i>note b.</i>	68
importance of proportions in respect to hardness, art. 171.	68, 69
modifications of, according to the purposes for which the mortars or cements are to be applied, art. 172	69
component parts of the best hydraulic lime, <i>note</i>	69
process to be applied to the hydraulic, and “eminently” hydraulic limes, when the ordinary mode of slaking is adopted, art. 185	73
how to treat eminently hydraulic limes after slaking, <i>note</i> ...	73
discovery of the virtues of Narva lime, <i>note</i>	73
mistake in using hot lime to accelerate the “set,” with a view to the greatest induration, art. 197	78
criterion of lime being completely slaked, art. 197.....	79
the bad qualities of rich limes corrected by the use of sugar, or molasses, <i>note</i>	84
with what limes the mixture of sand is injurious or beneficial, art. 208	85
what sands should be mixed with certain limes, art. 209—214	85—89
each kind of lime behaves, with respect to this or that sand, in a manner which is peculiar to it, art. 215.....	89
case of the rich limes, art. 216	90
of the simply hydraulic limes, art. 218	90

	Page
Lime.—The best proportions subordinate to the nature of the	
lime, and the mode of extinction, art. 220	91
choice of the mode of slaking, art. 221	91
detail of the manufacture of mortars with, art. 223–230...	91–94
different effect on certain limes when exposed to the	
atmosphere, art. 225	92
when the quartzose, or calcareous sands, are injurious to	
the hydraulic and eminently hydraulic limes, art. 239.	98
deterioration of, by the mixture of improper substances,	
art. 243	102
when the mixtures of rich limes and “inert” sands become	
decomposed in water, art. 247	103
hydraulic, may be employed as an ingredient in cast-	
ing ornaments in those cases in which the number	
of moulds ceases to be a difficulty, art. 259	109
how the artificial mixtures of pure lime and clay, in	
certain proportions, become natural or artificial	
cements, art. 266	113
extensive use of half-burnt lime in the works of the	
Burgundy Canal, art. 266.....	113
the earliest use of, to be found in one of the Egyptian	
pyramids, art. 268.....	114
mixture of sand with, in ancient mortars, art. 268.....	115
opinion of the Romans as to the best lime, art. 274	118
the properties of hydraulic lime totally unknown to them,	
art. 274	118
in paste, how employed by the Romans, art. 277	120
in the Roman cements, scarcely harder than chalk, art.	
278.....	120
combines chemically in artificial pouzzolanas, as well	
as in cements formed with the uncalcined psammites	
and arenas, with these substances, art. 314.	138
this confirmed by experiments, and the opinion of General	
Treussart, <i>note</i>	138, 139
varieties in the quality of, known to the ancients	144
Vitruvius’s account of the qualities of, repeated by modern	
authors	145
notice of experiments on eighty-three sorts of	145
remarks on the colour of	145
various opinions as to the virtues of hydraulic lime de-	
pending on the presence of manganese	150–152
how rich limes may be made to acquire hydraulic pro-	
perties, <i>note m.</i>	155

INDEX.	277
	Page
Lime.—Table of the weight of “rich lime” converted into paste	
by different processes	168, 169
weight of a cubic foot of dry slaked “rich” lime, pre- pared from sea shells, and slaked by immersion, <i>note s.</i>	168
difficulty of ascertaining the quantity of, put into mortar, when lime slaked by the ordinary process is used	169
how rich lime may be preserved for ages	169
instance of lime being kept rich and moist for five hundred years	169, 170
cause of the prejudices against hydraulic lime among the workmen	170
use of unmixed lime in buildings	175
impotency of the most caustic lime on quartz	180
inaction of hydraulic lime in the same circumstances	180
absence of chemical action by the hydraulic limes on various kinds of sand	181
its action in the humid way on silica and alumina when isolated	184
effect produced by mixing clay with, when each is in a state of pulp, <i>note</i>	185
when the “poor” limes may be used with advantage	194
best method of developing the virtues of hydraulic lime, <i>note</i>	196
danger of using it imperfectly slaked	198
comparison of the qualities of various limes, with the chemical composition of the lime-stones furnishing them.	237
the mutual suitableness of the various limes, with the different ingredients of cements and mortars compared.	243
See <i>Cements, Hydrates of lime, Hydraulic lime, Lime-</i> <i>stones, Mortars.</i>	
Lime-stones, properties, and component parts of, art. 1, 2	1
tests to discover, art. 1.	1
different varieties of, art. 3.	2
experiments to examine the qualities of, art. 6— 12. 23.	3—6, 11
each variety of, furnishes a peculiar kind of lime, art. 4.	3
actual trial, the builder’s only guide as to the qualities of, art. 5.	3
result of a chemical examination of the minerals supplying the various kinds of lime, art. 21... p. 9	
calcination of, in the large way, art. 25—45	13—19

278	INDEX.	Page
Lime-stones.—Difference between pure and compound lime-		
stone, art. 28.		13
how the argillaceous lime-stones become natural cements,		
art. 266.		113
this result observed in Russia by Colonel Raucourt		113
successfully applied by M. Lacordaire, in the works con-		
nected with the Burgundy Canal.....		113
nature and formation of		140—145
abundant supply of, distributed throughout England, <i>note</i> ,		
142—144		
chemical methods of appreciating the qualities of		143
M. Berthier's mode of analyzing		143
test to discover if they contain magnesia, <i>note d.</i>		144
process for ascertaining the quantity of lime in a com-		
pound of lime and magnesia, <i>note f.</i>		146
value of magnesian lime-stones for mortars and cements		
147—150		
experiments of M. Berthier and the Author on.....		150
effect of a current of aqueous vapour in accelerating the		
reduction of, into lime		152, 153
various experiments as to the effects of calcination on, 154—157		
comparison of the qualities of various limes with the		
chemical composition of lime-stones furnishing them... 237		
analysis of, furnishing rich lime		237
poor lime		237
feebly hydraulic lime		237
hydraulic lime		237
eminently hydraulic lime		237
Lime-water, action of, on the arenæ, psammites, clays, and		
pouzzolanas, art. 141		56
how deprived of its causticity, <i>note</i>		56
method of preparing a very strong one, <i>note</i>		85
“Litre,” capacity of this in English measure, <i>note e.</i>		144
Loamy particles in fine sands, injurious effects of, art. 214 ; p. 89.		203
Loriot, M. his process for hastening the “set” of a mortar ...		219
opinion of Mr. Smeaton on, <i>note</i>		219
answers well in the composition of stucco, <i>note</i>		220
Lumps, minute, found after slaking, treatment of 73, <i>note</i> ;		156
Lyonese method of preparing mortar, art. 226		93, 198
Lyons. See <i>Bridge</i> .		
M.		
Madras, account of magnesia found in the Presidency of		147

INDEX.	279
	Page
Madras, mode of preparing the "chunam" there, <i>note x.</i>	176
analysis of a cement used in, <i>note</i>	222
Magnesia found in old mortars, <i>note</i>	66
test to discover in lime-stone, <i>note d.</i>	144
account of the Madras magnesia	147
combines with water and forms a hydrate, <i>note</i>	147
experiment with, as to its acquisition of weight by im- mersion, and its tendency to "set" <i>note</i>	147
Magnesian lime-stones, properties of, <i>note v.</i>	8
method of analysing by hydration	146
extensive beds of, found in India, and their use.....	147—149
Malcolmson, Dr., analysis of a mortar brought by him from the pyramid of Cheops.. 114—116, <i>note</i> ; 175, <i>note</i> ; 222—224	
Manganese, nature of, <i>note c.</i>	1
various opinions as to the virtues of hydraulic lime, de- pending on the presence of	150—152
its oxide an ingredient in the manufacture of artificial hydraulic limes	163
Manipulation, the secret of good, art. 231	94
mortars of rich lime, fifteen months old, compared, in re- gard to the influence of.....	252
Manufacture of artificial hydraulic lime, art. 48—52.	
	p. 21, 22. 164—166
See <i>Hydraulic lime.</i>	
of artificial pouzzolanas, art. 144—160	58—63. <i>note a.</i> 64
of mortars or cements intended for immersion, art. 178— 190	71—75
of mortars exposed to the air and weather, art. 223— 230.....	91—94
of prisms at Alexandria in Piedmont.....	207, 208
of stuccoes. See <i>Stuccoes.</i>	
Marble, small slabs of, may be imitated with the rich and white limes, art. 99	42
opinion of the Romans that it furnished the finest lime, art. 274	118
Martin, Mr., account of his new cement.....	191
Masonry, when used instead of the "beton," art. 200	80
precaution respecting the soaking of materials used in ...	206
how cements should be employed in under-ground, masonry, 242	99
Masons, their opinion as to lime which slakes to dryness	167
Mastics, rich, used to repair damaged pouzzolanas	213
Masulipatam, notice of a water-lime found there, <i>note</i>	12

280	INDEX.	Page
Masulipatam, experiment with hydraulic and rich limes of, in the manufacture of cement, <i>note a.</i>		64
Matrix for mortars, in what it consists, art. 165.....		67
Mats, recommended to retard the drying of mortar, <i>note g.</i> ...		96
Mechanical agency of the particles in the solidification of mortar, considered, art. 288.		126
Medal.—The author presented with a gold medal by the society of “Encouragement,” for his discoveries, art. 260.		110
Meudon, account of the manufactory of artificial lime at, art. 52—54		22—24
Mica, nature of, <i>note c.</i>		46
often mistaken for talc, <i>note c.</i>		46
Middle ages, mortars of the, compared with those of the ancients, art. 280		122
Milk, used in India in the manufacture of stucco, <i>note x.</i>		176
Mill-works, a good mortar for repairing.....		177
Minerals, calcareous, and the limes they furnish		1—12
tests to discover, art. 1		1
“Minion,” meaning of the term, <i>note</i>		50
used as an ingredient in mortar, <i>note</i>		50
Mirrors, metallic, crystallization of, after solidification, <i>note m.</i>		133
Molasses, used to correct the bad qualities of rich limes, <i>note</i> ...		84
Molecular and successive motion applied to solve the phe- nomenon of the solidification of mortars, art. 308		133
Mortars, test to exhibit the action of the air on, <i>note d.</i>		35
when hydraulic mortars in the condition of hydrates can be employed, art. 100		42
materials added to lime in the formation of, art. 101—126		43—51
best proportion of lime or other cementing matter in, how ascertained, <i>note</i>		45
various action of the substances combined with lime, to form calcareous cements, art. 125		50, 51
qualities of the materials combined with lime in the fabrication of, art. 127—143.....		52—57
reciprocal suitability of the various kinds of lime, and the ingredients which unite with it, in the composi- tion of mortars and cements, art. 161—164.....		64—66
comparative table relating to		243
combination of materials necessary to obtain mortars or cements capable of acquiring great hardness in the water, or under-ground, or in situations constantly damp, art. 162		64

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

INDEX.	281
	Page
Mortars.—Ditto in the open air, and to resist rain, heat, and severe frosts, art. 163	65
reason for the superior durability of old mortars, <i>note b.</i>	65
contain silica and magnesia, <i>note.</i>	66
the most durable common mortars manufactured from hydraulic limes, <i>note.</i>	66
on the mixtures of the different limes with sand, and the other ingredients of mortars and cements	67
of calcareous mortars or cements intended for immer- sion, art. 165.—206.	67—83
choice of proportions, art. 166—172	67—69
choice of the process of extinction, art. 173—177 ...	69—71
of the manipulation or manufacture, art. 178—190 ...	71—75
of the using or immersion, art. 191—200	75—80
action of water upon the parts of the mortars and cements in immediate contact with it, art. 201—204	80, 81
influence of time, art. 205, 206	82, 83
a considerable excess of lime proper in common mortars, <i>note b.</i>	68
the best hydraulic mortar, according to Col. Raucourt, <i>note</i>	69
beatings, useful in hydraulic mortar, composed of lime and tarras, <i>note f.</i>	71
should be of a good clayey consistency, art. 182	72
test to prove the completeness of the extinction, art. 185, p.	73
in what case the lumps after slaking should be bruised and reduced to powder, <i>note h.</i>	73
directions respecting mortar or cement intended for imme- diate immersion, art. 189	75
when rammers are to be used instead of beaters, art. 190, p.	75
importance of the manner in which the beton is immersed, art. 191	76
box proposed by Belidor, the best, art. 192	76
how the immersion of the “beton” is carried on, art. 193..	76
directions when there is a flowing stream, art. 194.....	77
General Treussart’s method of immersion, <i>note l</i>	77
objections to the use of hot lime, and the immersion of the “beton” while warm, art. 197, 198	78, 79
directions when the immersion of a certain quantity of “beton” has been postponed, art. 199	79
when mortars or cements are used in a “dry way,” art. 200	80

	Page
Mortars.—Difference in the strength of hydraulic mortar when	
made with sea-water, <i>note</i>	81
the goodness of not always indicated by the rapidity	
of its “set,” art. 205	82
an excess of rich or slightly hydraulic lime in a cement	
retards its “set,” par. 1.....	83
what modes of extinction are best calculated to hasten	
the “set,” par. 2	83
progress of the induration of certain cements, par. 3.....	83
the relations. in respect to hardness, deduced from a com-	
parison of the three modes of slaking, how modified by	
time, par. 5.....	83
the use of mortars of rich lime should be prohibited in	
works of any importance, art. 207	84
an excellent mortar made in the East Indies, <i>note</i>	84
when sugar or molasses may be employed, <i>note</i>	84
results of a comparison of the mortars with the hydrates,	
art. 208	85
on the mixture of the different kinds of sand, art. 209—	
214	85—89
when fine sand produces excellent mortars, art. 214	89
on the resistance of mortars made from different limes,	
art. 216—220	90, 91
on the time required for “souring,” art. 223—225.....	92, 93
effects of a long continued trituration, art. 224. 226; p. 92, 93	
of the atmospheric influence on the ingredients of mor-	
tars, art. 225—227	92, 93
Lyonese method of preparing, art. 226	93
how far the treatment of mortars for immersion applies	
to those exposed to the air, art. 228	93
should always be prepared under cover, art. 229	93
mode of treating a very stiff mortar, art. 231	94
precept in which the secret of good manipulation is con-	
densed, art. 231.	94
the bricklayers’ practice in respect to, art. 231.	94
application of mortar in building, art. 232	94
effect on mortars exposed to a rapid desiccation, art. 234, p.	
how to prevent this when building takes place in hot wea-	
ther, art. 234	95
chalk mortar injured by being kept too long in a very	
damp state, <i>note g</i>	95
method of retarding the desiccation of mortar, <i>note g</i>	96

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

INDEX.	283
	Page
Mortars.—What mortars are best adapted to resist the effect of	
drying too soon, <i>note g.</i>	96
mortar a hundred years old still in its infancy, art. 235...	96
good mortars of rich lime seldom found, except in very	
old buildings, art. 235.	96
effect of the atmosphere upon certain mortars exposed	
to the air in small bulk, art. 236	96
atmospheric vicissitudes in climates not subject to frost	
increase the hardness of mortars, <i>note h.</i>	96
of calcareous mortars and cements subject to the influ-	
ence of a damp soil, art. 238—242	98—101
manufactured in the same way as mortars exposed to the	
weather, with certain exceptions, art. 238	98
resistance of different kinds of mortar when various pro-	
cesses are employed, art. 241	99
of the vicissitudes to which cements and mortars may be	
exposed, and the consequences, art. 243—252 ...	102—105
some mortars which solidify in the water crumble in a dry	
and warm air, art. 243.....	102
formed from the hydraulic or eminently hydraulic limes	
solidified in a damp soil, behave equally well in the	
open air and in water, art. 244	102
when these have hardened in the open air the induration	
will continue in water or a damp soil, art. 246.....	102, 103
formed by the simple mixtures of rich lime with “inert”	
sands, become decomposed in water, art. 247	103
cause of the speedy decay of mortars in India, <i>note</i>	103
indications of the resistance of mortars to the effects of	
winter in France, art. 249, 250.....	103, 104
age required for certain mortars to enable them to with-	
stand the frost, art. 250, 251.....	104
maximum limit of sand proper for mortars of rich limes	
used under the covered parts of buildings, art. 252 ...	105
influence of “beating” on the resistance of mortars in	
general, art. 253—260	106—110
may be moulded into any form or shape, art. 253.....	106
how it will take the appearance of stone, art. 253.....	106
when contained in a mould, may be beaten or rammed in	
the manner of “pisé,” art. 254.....	106
different effects of the process of beating, art. 256...107, 108	
casts made of, retain their hardness in the roughest wea-	
ther, and are often taken for stone, art. 257	108
difficulty of discovering a means of hastening the “set”	

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

284

INDEX.

	Page
of a mortar, without injuring its future qualities, art. 258	108
Mortars. —Loriot's process insufficient, art. 258.....	109
Col. Raucourt's liquid mortar for grouting, <i>note</i>	109
Mr. Smeaton's grouting, <i>note</i>	109
hydraulic lime may be employed in preparing artificial stones bearing mouldings, vases, &c., art. 259	109
antique, compared with those of medium age and modern mortars, art. 268—283.....	114—123
used in the pyramid of Cheops in Egypt, similar to the present, art. 268	114
analysis of the mortar, <i>note</i>	114
the use of cements known two thousand years ago, art. 268	115
superior durability of the Egyptian cements to the Roman, art. 269.....	115, 116
application of cements in Greece, art. 271.....	117
by the Romans, art. 272, 273	117—119
nature of their mortars and cements, and to what purposes applied, with an analysis of them, art. 272—283, p. 117—123	121
prepared with oil by the ancients, <i>note</i>	121
on the theory of.....	124—139
improved in hardness by reunion with carbonic acid, <i>note</i>	125
extent of our knowledge of, art. 287.	126
table showing the relative proportions of lime, sand, and carbonic acid in different mortars, <i>note</i>	137
various purposes to which mortars made with hydraulic limes have been applied.....	161—163
rapidity of absorption of carbonic acid by.	172, 173
composed of rich lime and a reddish, argillaceous pit- sand, much used in repairing mill-works	177
notice of the contradictions exhibited in different memoirs relating to mortars and pouzzolanas.	191—193
table of twenty compositions of water-mortar suited to different situations and circumstances	193
different views of the constitution of cement and mortars.	196
methods of fabrication and immersion adopted in the foun- dations of the bridge of Charles X. at Lyons	197
explanation of the deterioration of some water-cements and mortars	199
experiments of M. Petot on	200
cases of exception with regard to the influence of time on.	201

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

INDEX.	285
	Page
Mortars.—Experiments with mortars made of lime and cal- careous sand	201, 202
unanimous opinion respecting mortars and cements mixed “thin”	204
causes of the bad qualities of a mortar which has been drowned	204
observations on the mixing of, <i>note</i>	204, 205
influence of slow desiccation of, long known in Italy	207
experiments on the desiccation of	208
mortar eighty years old, found quite fresh	209
mortars of rich lime in a damp soil, harden after six or seven hundred years.....	209
table of the constituent parts of ancient mortars.....	210
effects of frost on mortars and stuccoes.....	213—218
durability of mortars taken from ancient bridges	225
opinions of M. Girard on hydraulic mortars composed with arenaceous sands controverted.....	228—231
comparison intended to show the mutual suitability of the various limes, with the different ingredients of ce- ments and mortars.....	243
hydraulic mortars and cements compared with regard to the process of slaking made use of	244, 245
comparison of the relative resistances of hydraulic mor- tars and cements, immersed in various states of con- sistency	246
hydraulic mortars and cements compared with reference to the deterioration which they undergo at their sur- faces	247
quickness of “set” of various hydraulic mortars and cements, compared with the resistance acquired after a year’s immersion	247
ditto of various cements, compared with the proportions and hardness acquired after a year’s immersion	248
the absolute resistance of mortars compared with those of the hydrates of lime constituting their gangues	249
mortars compared with reference to the size of the sand made use of.....	249
taken from various buildings compared with mortars manufactured for experiment, with the same limes.....	250
compared in regard to their proportions, and the process of slaking made use of	251
of rich lime, fifteen months old, compared in regard to the influence of manipulation	252

*L

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

286	INDEX.	Page
Mortars, compared with reference to the consistency given		
to the mixture of lime and sand		252
in regard to the influence of desiccation		252
the absolute resistance of various mortars compared in		
regard to the effect of condensation		253
various mortars and cements compared in regard to their		
specific gravity and porosity		253
characters, composition and absolute resistances of some		
Roman mortars from the South of France		254
comparison of the resistance of various compounds in re-		
gard to proportions and the size of the bodies im-		
bedded in the substance constituting the matrix.....		255
analyses of various old mortars		256
See <i>Cements, Hydraulic lime, Lime, Pouzzolanas, Stucco,</i>		
<i>Water cements.</i>		
Moulding, mortars may be made to take every possible form		
in, art. 253		106
contained in a mould may be beaten or rammed in		
the manner of "pisé," art. 254		106
mortar of hydraulic lime may be employed in, art. 259, p.		109
Mulgrave's cement, result of experiments on, <i>note f.</i>		123
Muriatic acid, its action upon sands, art. 135.....		54
on the clay of arenas, art. 136		55
on the schistose psammites, art. 137.....		55
on clays, art. 138		55
comparison of its action upon clays taken in different		
conditions		239
ditto of the qualities of hydraulic cements with the be-		
haviour of their ingredients in regard to.....		240, 241
N.		
Narva lime, how the virtues of were discovered, <i>note</i>		73
Natural cements, art. 261—267.....		111—113
See <i>Cements, Mortars, Pouzzolanas.</i>		
Needle, used for trying the hardness of mortars and cements..		184
Nitric acid, action of, on sands, art. 135.....		54
O		
Obernai lime, remarks on the burning of, <i>note d.</i>		17
Oil, mixed with ancient mortars, <i>note</i>		121
used in India, in the making of plaster.		176

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

INDEX.		287
		Page
Oil, and wax, form a good composition for protecting valuable work.		212
Old mortars. See <i>Antique mortars</i> .		
Ollivier, MM. account of their method of extinction.		170
Ombos, nature of the ancient mortar found there, art. 268 ...		115
Ornamental constructions, economy in, art. 259.....		109, 110
Oxide of iron, opinions as to the efficacy of, invalidated by facts.		183
Oxide of manganese, opinion of certain chemists on the efficacy of, in lime and mortar		163

P.

Paint.—A plaster or red paint laid over their mortars by the Romans, art. 277.		120
Paris, material with which the houses there are built, <i>note f.</i> ...		2
Parker's cement, analysis of, <i>note</i>		22
result of experiments on, <i>note f.</i> ...		123
notice of Messrs. Parker and Wyatt's patent for a "water cement," afterwards called "Roman cement".....		220
a similar cement made by M. Lesage.....		220
Pasley, Col., his water-cement, <i>note t.</i>		11
notice of his experiments with carbonate of magnesia ...		147
with coal-dust as an ingredient in cements, <i>note k.</i>		154
Paste.—Effects of water on soft and stiff pastes, art. 96.....		40
how it should be made to avoid shrinkage, <i>note g.</i> ...		41
quality of, to which the lime should be brought, art. 179—183.....		71, 72
when employed by the Romans, art. 277.		120
experiments to ascertain the cause of the cohesion of, <i>note</i>		127
effects of alcohol on a paste of slaked rich lime, <i>note</i>		127
Pavements, Grecian, quickly absorbed the water with which they were washed, art. 271.		117
Peat, advantage of using, in the burning of lime.		159
Peroxide of iron, nature of, <i>note b.</i>		55
Pestle, when it may be used with advantage, art. 187.		74
Petot, M., notice of his experiments on the relations which exist between the solubilities of lime joined with sand and the proportions of the mixtures, art. 309.		134
experiments on the deterioration of some water-cements and mortars.....		199, 200

*L 2

	Page
Phenomenon observed in mortars and cements in immediate contact with water, art. 201—204.....	80, 81
Phila, nature of the ancient mortar found in the island of, art. 268.....	115
Phosphate of lime deprives lime-water of its causticity, <i>note</i> .	56
Piers, pouzzolana employed by the Romans in the construction of, art. 274.....	118
nature of the “beton” used for the piers of bridges and the weight borne by it.....	161, 162
“Pisé,” nature of this mode of building, <i>note</i> .	106
Plaster used in India, how made.....	176
Plaster of Paris, used to guard the cement of the Eddystone light-house, <i>note k</i>	77
experiments upon the solidification of.....	226
Pliny, his account of ancient mortars, art. 280.....	122
Pointing, mortar composed of sand and hydraulic lime, used for.....	162
Polish.—Manner of polishing stucco in India, <i>note x</i> .	176
Porosity.—Various mortars and cements compared with regard to their specific gravity and porosity....	253
Portland stone, the superficial weight it will bear, <i>note f</i> .	123
Potash, on the mixture of, with clays previous to their calcination, in the fabrication of artificial pouzzolanas.	189, 190
Pot-shards, used as an ingredient in mortar, art. 124.....	50
Pouzzolanas.—History and properties of the natural pouzzolanas, or volcanic and pseudo-volcanic products, art. 118—123.....	48, 49
preparation of, for use, <i>note</i>	49
constituent parts of, <i>note</i>	49
substances comprised under the name of artificial pouzzolanas, art. 124.....	49
action of acids upon, art. 139.....	55
the artificial pouzzolanas exhibit the same phenomena as the natural ones, art. 140.....	55
deprive lime-water of its causticity, art. 141.....	56
manufacture of, art. 144—160.....	58—63
first method, art. 148.....	59
second method, art. 149.....	60
not materially injured by moisture, <i>note</i>	59
experiment with hydraulic and rich limes of Masulipatam, <i>note a</i>	64
proportions of lime required by, art. 168.....	68

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

INDEX.	289
	Page
Pouzzolanas, quick setting of mortars formed of, advantageous, <i>note</i>	82
the Romans unable to do without it in the construction of piers or jetties, art. 274.	118
strength of cements formed from, <i>note f.</i>	123
experiments on artificial pouzzolanas, with a view to ascertain the chemical properties of the lime in, <i>note.</i> 138,	139
the psammities in their natural state act as pouzzolanas with rich lime.....	178
Vitruvius's account of the properties of.....	178, 179
unequal manner in which some of the pouzzolanas of Italy behave with sulphuric acid	179
tile-dust, the most ancient of the known artificial pouzzolanas.	182
the presence of iron not indispensable in "energetic" pouzzolanas	183
influence of the contact of the air in the manufacture of,	183
absorption of oxygen by, not sufficiently established.....	183
investigation of the action of the separate constituents of, when mixed with rich lime.	184, 185
reverberatory furnace proposed for the calcination of	186
experiments of M. Bruyère upon artificial pouzzolanas, repeated on a large scale by M. St. Leger.....	187
experiments with clays in the production of.....	187—189
table of experiments on two pouzzolanas mixed with rich lime	190
explanation of the contradictions exhibited by various writers on	191
comparison of various artificial pouzzolanas with the Italian pouzzolana, Audenack tarras, and aquafortis cement	242
Prinsep, Mr., notice of his catalogue of Indian calcareous minerals, <i>note.</i>	12
Prisms, advantage of moulding the hydrates in this form, art. 98	41
manufacture of, in Italy	207, 208
Proportions used in the manufacture of hydraulic lime, art. 51	21
how to ascertain the best proportion of lime or other cementing matter in mortar, <i>note.</i>	45
choice of, in making mortars or cements intended for immersion, art. 166—172.....	67—69

290	INDEX.	Page
Proportions, exceptions offered by the poor limes in relation to		194
quickness of "set" of various cements compared with the proportions and the hardness acquired after a year's immersion		248
mortars compared in regard to their proportions and the process of slaking made use of		251
Protoxide of iron, <i>note b</i>		55
Psammites, nature of, art. 111, 112		46, 47
how acted upon by muriatic acid, art. 13		55
deprive lime-water of its causticity, art. 141		56
when the hydraulic properties of, first discovered		177
in their natural state, act as pouzzolanas with rich lime... ..		178
Pseudo-morphous, meaning of the term, <i>note g.</i>		2
Pseudo volcanic products. See <i>Pouzzolanas</i> .		
Puddling, hydraulic mortars may be employed in, art. 100		42
Pumps, use of, during the process of immersion, art. 195		77
Pyramids of Egypt, the mortar employed in, similar to the present, art. 268, and <i>note</i>		114, 115
See <i>Egypt</i> .		

Q.

Quartz, influence of, upon the cohesion of lime, art. 309, and <i>note</i>	134
impotency of the most caustic lime on	180
Quick-lime, phenomena produced by throwing it into water, art. 56	26
when only plunged into water for a few seconds, art. 61... ..	27
effect produced on, by the action of the atmosphere, art. 66, p. 29	
experiment for the preservation of, on a large scale	171

R.

Rain.—Combination of materials necessary to produce mortars or cements capable of resisting rain, art. 163.....	65
Rajahmundry clay, account of various experiments with, 226—228	
Rammers of cast-iron, use of, art. 187. 190	74, 75
when ramming may be employed, art. 254	106
Raucourt, Colonel, precaution as to the drying of prisms, <i>note f.</i>	24
test to discover the consistency of a good mortar, <i>note c.</i>	35
on the best hydraulic lime and mortar, <i>note</i>	69

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

INDEX.		291
		Page
Raucourt, Colonel, how he discovered the virtues of the Narva lime, <i>note</i>		73
on the effect of exposing mortars to the air, and the addition of water, <i>note</i>		75
his process for estimating the voids in a mass of stones, gravel, or sand, <i>note</i>		87
plan for determining the proportions in which gravel, stones, and sands ought to be mixed, <i>note</i>		88
remedy for retarding the desiccation of mortar, <i>note g.</i> ...		96
his opinion of the effect of the atmosphere on mortars, <i>note h.</i>		96
his liquid mortar for grouting, <i>note</i>		109
results observed by, in burning artificial hydraulic lime-stones in Russia, art. 266		113
experiment on rich limes, <i>note m.</i>		155
on calcined clays in Russia		183
description of an air-furnace, <i>note</i>		186
his composition for protecting valuable work.....		212
Resistance, in different mortars, art. 216—219, p. 90, and art. 241.		99
influence of beating on the resistance of mortars in general, art. 253—260.....		106—110
variation of the limits of absolute resistance of mortars of lime and sand, art. 281		122
absolute amount to be reckoned on in certain mortars, art. 282, 283.....		123
of mortars composed of lime and calcareous sand		202
comparison of the hardness and absolute resistance of compounds, resulting from the union of water with various limes		238
of the relative resistances of various hydraulic mortars and cements, immersed in various states of consistency ...		246
compared with the quickness of “set” of various hydraulic mortars and cements.....		247
the absolute resistances of mortars, compared with those of the hydrates of lime, constituting their gangues ...		249
of various mortars, compared in regard to the effect of condensation		253
of Roman mortars.....		254
of various compounds, in regard to proportions and the size of the bodies imbedded in the substance constituting the matrix.		255

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

292	INDEX.	Page
Reverberatory furnace, defects of		186, 187
Roman cement, directions for producing a cement similar to,		
<i>note</i> d.		23
proof of the excellence of, <i>note</i>		111
a natural cement, art. 263.		112
great consumption of, in London, art. 263.....		112
how its use will be restricted, art. 263.		112
no artificial composition made in France equal to it in		
point of hardness, art. 264		112
mortars,—composition, and absolute resistances of.		254
Romans, inferiority of the cements in their works on the Nile		
to those of the Egyptians, art. 269		116
afterwards instructed by their writers on architecture,		
art. 272		118
their opinion as to the production of lime of the finest		
quality, art. 274.....		118
the properties of hydraulic lime unknown to them, art. 274,		
p. 118		
unable to execute works under water without pouzzolana.		118
all their mortars exposed to the air, alike, art. 275		119
how their hydraulic mortars differ from ours, art. 276 ...		119
these usually intended to prevent the infiltration of water,		
and for what purposes used, art. 277		119
their use of a plaster, or red paint, and of lime in paste,		
for lining, art. 277.....		120
excellencies of their hydraulic cement, art. 278.....		120
the caskets and snuff-boxes of the modern Italians made		
of the same material, art. 278.....		120
the supposition that they possessed a secret for the fabri-		
cation of mortar controverted, art. 279, 280		121, 122
oil mixed up with their mortar, <i>note</i>		121
comparison of their mortars with those of the middle		
ages, art. 280		122
notice of their “Albaria Opera”		175
pounded brick employed by, instead of pouzzolana		179
nature of the sand used by		202
table of the constituent parts of certain Roman mortars		210
Rubble, coarse, how used with sand, <i>note</i>		87
proportions required to fill up the voids in, <i>note</i>		87
and for mixing, <i>note</i>		88
Russian cements, the best, <i>note</i> ,		73
natural cements recently found in Russia, art. 264		112

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

INDEX.

293

S.

	Page
Sand, different kinds of, and how produced, art. 102—110.	43—46
specific gravity of siliceous or quartzose sand, <i>note b</i>	44
method of ascertaining its density, <i>note b</i>	44
the sands characterized as “inert” substances, art. 132...	53
when acted upon by the acids, art. 135.....	54
mixtures of the different limes with, art. 167.....	63
proportions of lime required by the quartzose or calcareous sands, art. 169	63
what hydrates mixed with pure sand obtain the greatest hardness, art. 208	85
to what limes it is injurious or serviceable, art. 208.....	85
how sands were chosen by the ancient builders, art. 209...	86
no “inert” sand can form a good mortar, art. 209.	86
influence of the size of, art. 210—214	86—89
of sands suited to particular limes, art. 211—214.....	87, 88
the object of mixing sands, <i>note</i>	87
process of Col. Raucourt, <i>note</i>	87
how the voids in are filled up, <i>note</i>	87
process for determining the proportions in which sand should be mixed, <i>note</i>	88
in fine powder, in certain cases produces good mortar, art. 214	89
the quartzose powders may be also advantageously em- ployed, art. 214	89
the intervention of loamy or argillaceous particles in fine sands robs them of their qualities, art. 214	89
proportions of, to be added to rich limes, art. 216, 217...	90
to simply hydraulic limes, art. 218, 219	90
when injurious to the hydraulic and eminently hydraulic limes, art. 239.	98
proportions of, as mixed with different limes, art. 241 ...	99
requisite in mortars, to enable them to resist the effects of winter, par. 1—3	104
maximum limit of, necessary for mortars used in covered parts of buildings, art. 252	105
a reddish fine sand found in some ancient mortars, art. 268, p. 115	
none discovered in mortar brought from the pyramid of Cheops, <i>note</i>	116
always found in the Roman mortars, art. 279.....	121
absence of chemical action by the hydraulic limes on va- rious kinds of sand.....	181

294	INDEX.	Page
Sand.—Experiment upon the influence of calcareous sand in comparison with the granitic.....		201
ancient examples in favour of the principles laid down regarding the influence of the coarseness of the grain in sands		202
what sand used by the Romans.....		202
fatal instance of the employment of sand impregnated with argillaceous particles.....		203
mortars compared with reference to the size of the sand made use of		249
Saw.—Use of the Spring-saw, art. 127—129.....		52
Scales. See <i>Forge scales</i> .		
Schist, explanation of the term, <i>note c</i>		46
Sea-water, superior strength of hydraulic mortar made with, <i>note</i>		81
“Set” of hydraulic limes, how measured, art. 20		9
quickness of, how influenced, art. 95, p. 40, and art. 197, p. 78		
rapidity of, not always an indication of the goodness of a cement, art. 205.....		82
defects of mortars of hydraulic limes which set quickly, <i>note</i>		82
a quick “set” advantageous in mortars formed of pouzolanas, <i>note</i>		82
an excess of rich or slightly hydraulic lime in a cement retards its “set,” par. 1		83
what modes of “extinction” are calculated to hasten it, par. 2.....		83
difficulty of hastening, without injuring the future qualities of the mortar, art. 258		108
difference of time in the “set” of natural cements, art. 262		111
M. Lorient’s process for hastening		219
quickness of “set” of various hydraulic mortars and cements compared with the resistance after a year’s immersion		247
of various cements, compared with the proportions, and the hardness acquired after a year’s immersion		248
Shells.—Excellent quality of mortar made of calcined shells and sugar, <i>note</i>		84
Sheppy cement, an analysis of, <i>note</i>		22
Shrinkage in the hydrates of rich limes, art. 98, 99.....		41
how this may be diminished, <i>note</i>		41
Silica found in old mortars, <i>note</i>		66

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

INDEX.	295
	Page
Silica, action of lime on, in the humid way	184
forms a good hydraulic cement with rich lime	184
Silicate of lime, nature of, <i>note</i>	206
Skeleton vault of bricks, when used	161
Slag, smithy, used as an ingredient in mortar, art. 124	50
foundry,—mixed with the cement employed in the new docks at Sunderland, <i>note</i>	50
mode of application in this case, <i>note</i>	50
and dross from large furnaces, give but “feebly ener- getic” pouzzolana, art. 159	63
Slaking of lime, phenomena exhibited by, art. 8	4
expansion occasioned by, <i>note</i> q.	7
ordinary process, art. 56	26
how abused, art. 57	26
expansion of the different kinds of lime by, art. 58	26
effect of cold water upon rich lime in effervescence, art. 59	27
effect of “chill” in, art. 59	27
what renders lime sluggish in, art. 60	27
second process of extinction, art. 61—65	27—29
how it ought to be practised in order to reduce rich lime well, art. 63	28
water absorbed by, art. 63.	28
expansion of the various limes by, remarks on, <i>note</i> c. ...	29
order of the three processes in reference to the most per- fect division of the limes, art. 68	29
action of the carbonic acid of the atmosphere upon limes differently slaked, art. 70—75	30, 31
method of preserving the different limes before and after extinction, art. 76—78	32, 33
shrinkage dependent upon, art. 98, and <i>note</i> g.	41
process of, how regulated, art. 173	69
processes most suitable to certain limes, art. 177, p. 70; art. 221, 222	91
a certain sign of complete slaking, art. 197	79
history of the various modes of, with an examination of Fleuret’s process	167
methods used at Doué to slake hydraulic lime on a large scale	170
explanation of the influence of the different modes of, 194—196	
a mode of, approved by trial on a large scale	197
hydraulic lime should be slaked quickly, <i>note</i>	197
instance of the danger of imperfect slaking	198

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

296	INDEX.	Page
Slaking of lime, explanation of the varied effects of the different methods of		203
hydraulic mortars and cements compared with regard to the process of slaking made use of		244, 245
mortars compared in regard to their proportions and the process of slaking used		251
See <i>Extinction, Immersion</i> .		
Slow-heat, irregular action of the coal-kiln by, art. 41, 42;		p. 17, 18
Smeaton, Mr., materials used by, as ingredients in mortar, <i>note</i>		50
remark on the Aberthaw blue lias, <i>note</i>		70
directions as to beating, <i>note f.</i>		71
coating used by, to guard the cement of the Eddystone light-house, <i>note k.</i>		77
experiments on hydraulic mortars made with fresh and sea-water, <i>note</i>		81
composition of his "grouting," <i>note</i>		109
his observations as to the colour of limes, <i>note e.</i>		146
his account of Dutch tarras, <i>note</i>		178—180
table of twenty compositions of water-mortars		193
his opinion of M. Lorient's process for hastening the "set" of mortars, <i>note</i>		219
Snuff-boxes. See <i>Caskets</i> .		
Soaking.—Precautions respecting the soaking of materials used in masonry		207
Solidification, of mortars at all times the subject of controversy, art. 284		124
discussion of the various hypotheses, art. 284—313, p. 124—130		
not a necessary consequence of the chemical combination of two soft or pasty substances, brought into contact in the humid way		185
experiments upon the solidification of the calcined sulphate of lime		226
upon the solidification of cements composed of rich lime and artificial pouzzolana		226—228
See <i>Hardness</i> .		
Solids resulting from the simple combination of water and lime, art. 79—100.		34—42
See <i>Hydrates of lime</i> .		
Solubility of rich lime in water, art. 14		6
increased by sugar, <i>note n.</i>		6
Souring.—Time required for lime to sour, art. 186		74
whether benefited by a long souring, art. 223		92

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

INDEX.	297
	Page
Specific gravity.—Various mortars compared in regard to their specific gravity and porosity	253
Spontaneous extinction. See <i>Extinction</i> .	
St. Leger, M., description of his process for making artificial hydraulic limes, art. 52—54.....	21—24
experiments on artificial pouzzolanas on a large scale	187
his machine for the fabrication of hydraulic mortars.	205
Stalactites, how formed, <i>note e.</i>	38
may be observed under the arches of some bridges, <i>note e.</i>	38
Stanhope, Lord, his successful application of a current of aqueous vapour in the calcination of lime-stone....	153
Statuary marble, how termed by the French, <i>note e.</i>	2
Stere, its equivalent English measure, <i>note f.</i>	17
Stink-stone. See <i>Swine-stone</i> .	
Stone, method of giving mortar the appearance of, art. 253, p.	106
casts in bas-relief and in alto-relievo bear a strong re- semblance to common stone, art. 257	108
mortar of hydraulic lime may be employed in preparing artificial stones bearing mouldings, vases, or ornaments, art. 259	109
resistance of building-stone, art. 281	122
the assertion that factitious stones of lime and sand can be made as hard as flint, to be received with caution, art. 281	122
the superficial weight borne by Portland stone, <i>note f.</i> ...	123
mode of manufacturing artificial stones at Alexandria in Piedmont.....	207, 208
value of M. Brard's process for discovering whether they are likely to be affected by frost	218
Stream.—Advantages of a flowing stream in the process of immersion, art. 194	77
Strength, comparative, of hydraulic mortars made with fresh and sea-water, <i>note</i>	81
Stucco.—The employment of sugar or molasses advan- tageous when buildings are to be stuccoed with rich lime, <i>note</i>	84
composition of Mr. Higgins's patent stucco, <i>note e.</i>	89
rapidity of absorption of carbonic acid by.....	172, 173
mode of preparing the Madras chunam, <i>note x.</i>	176
defects in the manufacture of, <i>note e.</i>	32
remedy against the speedy decay of, used in India, <i>note ..</i>	103
how stucco should be laid on, when exposed to the vicis- situdes of the weather, <i>note</i>	104

298	INDEX.	Page
Stucco, Grecian, perfection of, art. 271.....		117
value of the carbonate of magnesia for		148
mode of preparing M. Martin's new stucco		191
compositions for the protection of, from the weather.....		212
progress of its decay in India, <i>note</i>		213
M. Lorient's process for hastening the "set," of use in the composition of, <i>note</i>		220
explanation of the term "burnt stucco".....		226
Sub-carbonate of lime, art. 30		14
Sugar increases the solubility of lime in water, <i>note</i> n.....		6
used to correct the bad qualities of rich limes, <i>note</i>		84
employed in stuccoes, <i>note</i> p. 84, and <i>note</i> x.....		176
and in plaster, <i>note</i>		176
effect of a solution of sugar, on a paste of slaked rich lime, <i>note</i>		127
Suitableness, mutual, of the ingredients with the various limes in relation to the destination of the mortars or cements for the preparation of which they are used, art. 161—164.....		64—66
comparative table relating to		243
Sulphate of lime, experiment with		226
Sulphate of potash, a solution of, used with powdered gypsum in the preparation of stucco		191
Sulphuretted hydrogen, nature of, <i>note</i> d.		2
Sulphuric acid, its action on sands, art. 135.....		54
on the natural pouzzolanas, art. 139.....		55
on the artificial ones, art. 140		55
concentrated, effect on, by exposure to the air, <i>note</i>		171
substitute for, <i>note</i>		172
Sunderland, cement used in the construction of the docks at, <i>note</i>		50
Swine-stone, properties of, <i>note</i> s.		9

T.

Talc, its similarity to mica, <i>note</i> c.	46
Tar, liquid, used as a wash to protect the hands of masons in France from the action of the lime, art. 233.....	95
coatings of common tar found to be the best remedy against the speedy decay of mortars and cements in India, <i>note</i>	103
Tarras, artificial, remark on, <i>note</i>	59
nature and properties of Dutch tarras, <i>note</i>	178—180

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

INDEX.		299
		Page
Tarras, composition of six sorts of		193
comparison of various artificial pouzzolanas with the Italian pouzzolana, Audenack tarras, and aquafortis cement		242
Tests to discover calcareous minerals, art. 1.....		1
the proper calcination of rich lime, <i>note n.</i>		6
of the insoluble residue in rich limes, <i>note o.</i>		7
of a mineral composed of rich lime, art. 23.....		11
the carbonising of hydrates of lime, art. 82, and <i>note d.</i>		35
the consistency of a good mortar, <i>note c.</i>		35
the completeness of "extinction," art. 185.....		73
magnesia in limestone, <i>note d.</i>		144
Thames ballast used in the manufacture of "concrete," <i>note.</i>		100
Theory of calcareous mortars and cements, art. 284—314.		124—139
the solidification of mortars always a subject of contro-		
versy, art. 284		124
opinions of Black, Higgins, Achard and others, art. 285.		124
discovery and experiments of M. John, art. 285, 286. p. 124, 125		125
of adherence and cohesion, with the opinions of Macquer, and Girard, art. 290.....		126, 127
observations upon this theory, <i>note</i>		127
opinions of Lorient and Lafaye, art. 291.....		128
definition of "adherence," art. 293		128
four remarkable cases presented by the theory of "aggre-		
gates," art. 295		129
probable theoretical consequences of the first case, art.		
296—301.		129, 130
of the second case, art. 302, 303		131
of the third case, art. 304, 305		131
of the fourth case, art. 306		131
facts in support of the theory of aggregates, art. 308 ...		133
observations on an assertion of M. John's, art. 312. p. 136, 137		137
M. Berthier's explanation of the solidification of hydraulic cements, art. 313.....		138
the author's opinion as to chemical combination, art. 314.		p. 138, 139
Tile, fragments of, used as an ingredient in mortar, art. 124...		50
Tile-dust, the most ancient of the known artificial pouzzo-		
lanas		182
Time, influence of, upon mortars and cements, art. 205, 206; p. 82, 83		
cases of exception as to		201
Toulon, artificial limes employed in the harbour of, art. 46 ...		20

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

300	INDEX.	Page
Treussart, General, on the expansion of limes by slaking, <i>note q.</i>		7
remarks on the burning of Obernai lime, <i>note d.</i>		17
on common lime, <i>note c.</i>		29
experiment with a rich slaked lime long soured, and lime fresh slaked, <i>note</i>		39
on the deterioration of clay, by calcination, when it contains lime, <i>note</i>		58
on artificial tarras, <i>note</i>		59
clay recommended by, for the manufacture of pouzzolanas, <i>note f.</i>		62
method of immersion proposed by, <i>note l.</i>		77
remarks on the solidification of mortars, <i>note</i>		139
experiment on the mixture of clay and lime, <i>note</i>		185
on the mixing of mortar, <i>note</i>		204, 205
Trituration, injurious effect of, when kept up beyond the time necessary for the perfection of the mixture, art. 224...		92
how a long-continued one will be favourable to rich limes, art. 226.....		93
Tuff, or tufa, meaning of the term, <i>note e.</i>		48
Turf, refuse of the combustion of, used as an ingredient in mortar, art. 124		50
Turmeric paper, its use as a test for hydrates.....		174
Turpentine, spirits of, effect on slaked rich lime, <i>note</i> ...		127, 128

U.

“ Using,” or immersion, art. 192—200.....	75—80
See <i>Immersion</i> .	

V.

Vapour.—A current of aqueous vapour accelerates the reduc- tion of lime-stone into lime, <i>note</i>	152, 153
this principle successfully applied by Lord Stanhope.....	153
properties of the vapour which rises during the process of extinction	166, 167
effect of the vapour from lime while slaking, on the appetite of the workmen.....	167
Vicat, M., his opinion of magnesian lime-stones.....	150
Virgin sands, nature of, art. 106	45
Vitruvius, authority of, as to Greek and Roman architecture, art. 273, p. 118; cited art. 274	119
his rules as to the qualities of lime repeated by mo- dern authors	145

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

INDEX.

301

	Page
Vitruvius, notice of the "Albaria Opera" of the Romans.....	175
his account of pouzzolana.....	178, 179
Voids in a mass of stones, gravel, or sand, how to estimate, <i>note</i>	87
Volcanic products, substitute for, art. 144	58
See <i>Pouzzolanas</i> .	

W.

Walls of modern houses will bear a comparison with ancient ones, art. 280	122
Water, importance of the proportion of, in manufacturing mor- tars, art. 80	34
its action on the hydrates of lime, art. 87—100	38—42
containing carbonic acid, dissolves carbonate of lime, <i>note e.</i>	38
effects produced by the superficial waters of the earth, <i>note e.</i>	38
proportion of absorbed by hydrates of lime, art. 83—93; p. 38, 39	
combination of materials necessary to produce mortars, or cements capable of acquiring great hardness in water, art. 162	64
care required in the employment of, in certain cases, art. 183, p. 72; art. 187, 188	74, 75
when water should not be added to hydraulic limes, <i>note.</i>	75
its action upon the parts of mortars and cements in im- mediate contact with it, art. 201—204; p. 80—83, p. 199—201	
experiments on hydraulic mortar made with fresh and sea-water, <i>note n.</i>	81
when it should be added to the lime in paste, art. 230 ...	94
a stiff mortar should be continually watered, art. 231 ...	94
the masonry to be watered during the hot weather, art. 234, p. 95	
durability of certain mortars in, art. 243—247	102, 103
Mr. Smeaton's "grouting" hardens under water, <i>note</i>	109
quickly absorbed by the Grecian pavements, art. 271 ...	117
mortar used by the Romans to prevent the infiltration of, art. 277	119
substances possessing considerable tenacity when kneaded with, <i>note</i>	127
on the use of, in making mortar	204—206
Water-cements and mortars.—Notice of Colonel Pasley's ex- periments on magnesia cement, <i>note t.</i>	11
table of twenty compositions of water mortars	193

*M

Cambridge University Press

978-1-108-07151-2 - A Practical and Scientific Treatise on Calcareous Mortars and Cements,
Artificial and Natural

Louis-Joseph Vicat Edited and translated by John Thomas Smith

Index

[More information](#)

302	INDEX.	Page
Water-cements and mortars.—Explanation of the deterioration of some water-cements and mortars, with experiments of M. Petot.....		199
proportions of the mixtures for		243
Water-lime, notice of one found at Masulipatam, <i>note</i>		12
Wax. See <i>Oil</i> .		
Weather, compositions for protecting stucco from the effects of,		212
See <i>Air, Frost, Heat, Rain</i> .		
White, Mr., result of his experiments on Parker's and Mulgrave's cements, <i>note f.</i>		123
White-wash, mode of preparing, art. 59		27
Winter, effects of, on mortars in France		104, 105
See <i>Frost</i> .		
Y.		
Yorkshire cement, analysis of the, <i>note</i>		22

G. Woodfall, Printer, Angel Court, Skinner Street, London.