APPENDIX.

No. 4.

Statistical notices of the Mines in Cornwall and Devon.

As the foregoing pages contain so many details of the descriptive and economic geology of the mining districts of the Duchy of Cornwall, it may be useful to add a brief notice of their mineral produce,—of the population employed,—machinery required,—and materials consumed in them.

In "*Gryll's Mining sheets*"[1] the yearly produce of tin and copper ore is accurately stated; and their quantities and value during many years are given in great detail by Sir Charles Lemon, Bart.,[2] and Joseph Carne, Esq.[3]

Of the other minerals, the produce of which is less easily ascertained, the best account is by Mr. Courtney;[4] and some useful information will be found in Sir Henry Thomas De la Beche's "*Report*," pp. 609–618.

I have satisfied myself of the general accuracy of Sir Charles Lemon's statement[2] of the population

---

1 Printed and sold by Francis Symons, Redruth.

2 Journal of the Statistical Society, i. (1838), pp. 70–78. 3 Ibid, ii. p. 261.

4 Treatise on the Statistics of Cornwall, Report of Royal Corn. Polytechnic Society (1838), p. 81.

employed in the mines, and made much use of it. In a few instances, however, I have had occasion to quote from Mr. Courtney's "*Statistical remarks on Saint Just*,"[1]—from the Rev. Dr. Buller's "*Statistical account*" of the same parish,[2]—and from "*The Bodmin Register*,"[3] published by the Rev. John Wallis.

My information respecting the steam power employed is chiefly derived from Messrs. Lean's "*Historical statement of the improvements in Cornish steam-engines*," pp. 143-145,—from their "*Engine Reporter*,"—from Mr. Tonkin's "*Account of the work performed by steam-engines*,"[4]—and in some instances from my own personal enquiries.

Sir Charles Lemon has given[5] a copious list of materials consumed in the mines, from which I have largely quoted: the remaining details have been furnished me by the kindness of Gentlemen conversant with the respective particulars.

As the tin ore *(black tin)* is sometimes sold publicly, and at others by private contract, it is impossible to particularize the quantity produced by each mine. The copper ore, except in the Callington and Tavistock district, is universally brought to public sale: the produce of each mine is therefore well known.

---

1 Report of the Royal Cornwall Polytechnic Society (1841), p. 99.

2 8vo., Rodda, Penzance, 1842. 3 12mo., Liddell, Bodmin, 1838.

4 A periodical exactly similar to that formerly published by Messrs. Lean, and which contained the *Reports* of engines not recorded by them.

5 Journal of the Statistical Society, i. pp. 76–81.

As Sir Charles Lemon's labours have supplied so full a description of the state of the mines in the year 1837–8, I have thought it better to give such additions to that account as were in my power, than to attempt a similar one for a more recent period.

The following table affords a view of the produce of the copper mines; and of the persons at work, and steam and water employed, in all the mines in the Duchy generally, during the year ending with June, 1838.

TABLE I.

Showing the Population employed, and Engines working in the Mines of Cornwall and Devon, and the quantities of Copper ore produced from them during the year ending June, 1838.

Mines.	Copper ore.	Value.	Persons employed.				Single-acting steam-engines pumping water.			Steam-engines drawing ores, and working stamping-mills.			Water-wheels.	
	Tons of 21 cwt.		Men.	Women.	Children.	Total.	Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Diameter. Feet.	Width in breast. Feet.
THE St. JUST DISTRICT.		£												
Levant	2,910	37,070	320	44	186	550	40·	9·	7·	20· 20·	4· 4·	4· 4·		
Botallack	10	185	..	..	..	172[1]	30·	6·3	5·4					
Spearn Moor	14	317	..	..	..	11[1]	20·[1]							
Spearn	..	..	..	..	..	70	20·[1]	..	..	20·[1]				
Wheal Owles	..	..	110	..	21	131	24·	7·	6·					
Boscean	..	..	65	..	24	89	36·[1]	..	..	24·[1]				
Bosorn	..	..	16	..	4	20								
Ballowal	..	..	27	..	9	36								
South Wheal Rose	..	..	29	..	12	41	..	..	..	..	..	..	12·	4·
Wheal Saint Just	..	..	2	..	..	2								
Tregavara	..	..	25	8	..	33	20·	..	..					
Boscaswell Downs	..	..	182	5	59	246	24·	6·	6·	18·	4·	4·		
Balleswidden	..	..	..	..	..	634[1]	24·	7·	6·	24· 18·[1] 24·[1] 36·[1]	5·	5·		
Wheal Treasure	..	..	5	..	3	8								
Wheal Maitland	..	..	20	..	6	26	20·							

1 Statistical account of the Parish of St. Just; by The Rev. John Buller, L.L.B.

TABLE I. continued.

Mines.	Copper ore. Tons of 21 cwt.	Value.	Persons employed.				Single-acting steam-engines pumping water.			Steam-engines drawing ores, and working stamping-mills.			Water-wheels.	
			Men.	Women.	Children.	Total.	Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Diameter. Feet.	Width in breast. Feet.
THE St. IVES DISTRICT.		£												
Ding Dong	..	..	..	..	..	..	30· 21·5	6· 5·	6· 4·	12· 15·	4·5 5·	4·5 5·		
Morvah and Zennor Mines	..	..	86	2	28	116	40·	8·	7·					
Saint Ives Consols	..	..	237	16	60	313	50·	..	..	20· 20· 20·	4· 4· 4·	4· 4· 4·		
Wheal Trenwith........	476	4,457	83	6	20	109	30·	8·	7·	18·	4·	4·		
Balnoon	..	..	62	6	12	80	30·	8·	7·	20·	4·	4·		
Wheal Reeth	..	..	147	18	66	231	36·	7·5	7·5	20· 20· 30· 15·	5·7 4· 4· 4·	5·7 4· 4· 4·		
Wheal Mary	..	..	118	14	31	163	20·	6·	6·	14·5	3·7	3·7		
South Wheal Mary......	..	..	11	..	3	14								
Tincroft Consols	..	..	33	..	4	37	20·							
Providence Mines	777	6,576	83	19	30	132	30·	6·	6·					
West Poldice	..	..	..	..	..	30	56·	9·	5·5					
Baldue	..	..	5	..	1	6								
Gurnett's Head	..	..	24	..	..	24	..	..	..	..	..	..	30·	3·5
Lelant Consols	..	..	20	..	..	20								
Wheal Sarah	..	..	12	..	..	12	..	..	..	..	..	..	20·	2·

TABLE I. continued.

Mines.	Copper ore. Tons of 21 cwt.	Value.	Persons employed.				Single-acting steam-engines pumping water.			Steam-engines drawing ores, and working stamping-mills.			Water-wheels.	
			Men.	Women.	Children.	Total.	Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Diameter. Feet.	Width in breast. Feet.
THE MARAZION DISTRICT.		£												
Tredavoe	..	..	8	3	5	16								
Wheal Fire	..	..	6	..	..	6								
Gwallon	..	..	100	16	20	136	36·	8·	6·					
Wheal Bolton	..	..	64	6	..	70	63·	8·	6·5	..	..	..	50·	5.
Rospeath	..	..	42	4	6	52	45·	8·	6·					
Great Wheal Fortune	..	..	165	15	27	207	85·	10·	8·					
Wheal Friendship	3,143	19,079	85	19	11	115	75·	9·	7·5					
Wheal Prosper	..	..	68	6	6	80	80·	9·7	7·7					
Owen Vean	..	..	62	4	6	72	70·	9·7	7·7					
Trevarthen Downs	..	..	6	7	3	16	70·	10·	7·5					
Penberthy Crofts	..	..	21	3	3	27	..	..	..	..	..	..	38·5	7·9
Hallamanning	..	..	10	..	..	10	36· 36·	7·8 9·2	5·7 6·6					
Wheal Neptune	..	..	4	..	..	4								
Wheal Virgin	2,936	16,768	167	134	91	392	30·	9·	7·					
Wheal Darlington	540	3,119	215	50	52	317	60· 80·	10· 10·	8· 8·					
Marazion Mines	1,659	9,729	222	83	96	401	60· 19·	9· 6·5	8· 6·5	18·	4.	4·		
Wheal Speed	..	..	10	..	..	10								
„	301	2,640												
Perran Downs	..	..	41	..	..	41	30·	6·	6·					

TABLE I. continued.

Mines.	Copper ore. Tons of 21 cwt.	Value.	Persons employed. Men.	Women.	Children.	Total.	Single-acting steam-engines pumping water. Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Steam-engines drawing ores, and working stamping-mills. Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Water-wheels. Diameter. Feet.	Width in breast. Feet.
THE GWINEAR DISTRICT.		£												
Wheal Providence	741	6,055	61	8	24	93	36·	9·	7·					
Trevaskus	274	1,928	103	30	11	144	60·	10·5	8·5					
Wheal Fancy	..	..	8	..	..	8								
Binner Downs..........	2,704	13,605	250	100	40	390	70·	10·	7·5					
							50·	9·6	8·0	19·	4·5	4·5		
							42·	9·	7·5	19·	4·5	3·5		
							24·	5·2	5·2					
Relistian	2,435	16,405	138	67	45	250	60·	9·	7·5	22·	5·	5·		
										22·	5·	5·		
Wheal Julia	1,061	6,166	100	26	22	148	80·	11·	9·	10·	4·	4·		
										12·	3·5	3·5		
Godolphin	1,602	11,968	370	70	40	480	80·	10·	8·					
							80·	10·	8·					
THE HELSTON DISTRICT.														
Great Work............	207	2,033	298	46	74	418	60·	9·	7·	15·	3·5	3·5		
							60·	8·	7·					
Wheal Vor	62	391	592	327	255	1,174	80·	10·	8·	24·	6·5	6·5		
							80·	10·	7·5	27·	5·	5·		
							53·	9·	7·5	16·5	5·	5·		
							45·	6·8	5·6	24·	5·	5·		
							24·	6·	6·	16·	3·5	3·5		
							48·	9·	7·	14·	4·	4·		
										18·	4·	4·		
										18·	4·	4·		
										16·	4·	4·		
										16·	4·	4·		

TABLE I. continued.

Mines.	Copper ore. Tons of 21 cwt.	Value.	Persons employed.				Single-acting steam-engines pumping water.			Steam-engines drawing ores, and working stamping-mills.			Water-wheels.	
			Men.	Women.	Children.	Total.	Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Diameter. Feet.	Width in breast. Feet.
HELSTON DISTRICT continued.		£												
Wheal Trewavas	1,073	6,866	102	42	17	1 61	45·	9·	7·5	18·				
Wheal Ann	..	..	..	..	..	121	48·	9·	6·					
Wheal Trumpet	..	..	..	..	..	60	..	..	..	..	..	..	14·	7.
Wheal Trevenen	..	..	..	..	..	30	36·	9·	6·					
Wheal Curtis	127	662	..	..	..	60	42·	8·	5·7					
Wheal Gray............	..	..	..	..	..	130	60·	9·	7·	18·	5.	5·		
Wheal Osborne	110	813	40	6	6	52	40·	8·	7·					
Wheal Rose............	..	..	4	..	..	4								
Wheal Leeds	474	2,796	..	..	..	..	36·	8·	8·					
Sydney Cove	88	635	..	..	..	..	30·	7·	7·					
THE CAMBORNE DISTRICT.														
Duffield................	739	5,638	..	..	..	..	80·	11·	9·					
Copper Bottom	552	3,035	43	21	8	72	45·	8·	7·					
Copper Valley..........	..	..	4	..	1	5								
Stray Park	1,132	6,554	137	30	22	189	60·	8·	5·5	18·5 18·5	7· 4·5	7· 4·5		
Dolcoath	2,902	13,787	300	220	70	590	76·	9·	7·5	13· 20· 20· 20· 18· 10·	5· 5· 5· 6· 4·5 4·	5· 5· 5· 6· 4·5 4·		

TABLE I. continued.

Mines.	Copper ore. Tons of 21 cwt.	Value.	Persons employed. Men.	Persons employed. Women.	Persons employed. Children.	Persons employed. Total.	Single-acting steam-engines pumping water. Diameter of cylinder. Inches.	Single-acting steam-engines pumping water. Stroke in cylinder. Feet.	Single-acting steam-engines pumping water. Stroke in pumps. Feet.	Steam-engines drawing ores, and working stamping-mills. Diameter of cylinder. Inches.	Steam-engines drawing ores, and working stamping-mills. Stroke in cylinder. Feet.	Steam-engines drawing ores, and working stamping-mills. Stroke in pumps. Feet.	Water-wheels. Diameter. Feet.	Water-wheels. Width in breast. Feet.
CAMBORNE DISTRICT continued.		£												
Cook's-kitchen	2,030	9,909	..	..	..	247	50·	..	..	15· 16· 24·1	..	..	54· 46· 52.	2·3 2·5 3·
Tincroft	1,987	8,327	..	..	..	309	56·	9·3	7·2	36·	9·	3·5		
Cairn Brea	6,918	41,362	517	137	69	723	76.	9·	7·8	20· 18· 18·	5· 4· 4·	5· 4· 4·		
Wheal Harriette	221	402	21	8	4	33								
Wheal Agar	..	..	..	..	..	55	50·	9·	7·					
Camborne Consols	..	..	4	..	..	4								
West Dolcoath	..	..	4	..	1	5								
Wheal Rome	..	..	..	..	..	8								
Wheal Seaton	112	821	..	..	..	50	45·	6·6	5·7					
North Roskear	4,310	24,554	300	190	150	640	70· 36·	10· 8·	8· 6·	18·	4·	4·		
South Roskear	2,517	11,659	148	172	60	380	60· 30·	9· 8·	7· 6·	16· 22·	4· 5·	4· 5·		
East Wheal Crofty	8,134	40.185	456	404	144	1,004	80· 36·	10·3 8·	7·7 7·	26·	5·	5·		
East Pool	1,957	15,311	111	82	18	211	60·	9·7	7·7					
Glebe	..	..	2	..	..	2								
South Wheal Basset	2,039	10,994	..	..	..	230	40· 30·	7·5 7·	6·2 6·					
Wheal Tehidy	..	..	..	..	..	..	36·	9·	7·					

1 With a second cylinder 45 inches in diameter.

TABLE I. continued.

Mines.	Copper ore. Tons of 21 cwt.	Value.	Persons employed. Men.	Women.	Children.	Total.	Single-acting steam-engines pumping water. Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Steam-engines drawing ores, and working stamping-mills. Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Water-wheels. Diameter. Feet.	Width in breast. Feet.
THE REDRUTH DISTRICT.		£												
Wheal Tolgus	177	955	..	..	..	..	70· 70· 25·5	10· 10· 6·	7·5 7·5 6·	20· 18·	4· 4·	4· 4·		
Wheal Buller	1,983	11,876	83	42	30	155	36· 36·	7·7 8·	6· 6·					
Tresavean	12,303	76,272	..	..	..	1,354	60· 60·	7·7 8·7	6· 7·2	20· 20· 20·	4· 4· 4·	4· 4· 4·		
Trethellan	591	2,324	..	..	..	77								
Wheal Damsel	253	1,449	28	1	11	40	50·	9·3	7·2	20·	4·	4·		
Wheal Jewel	3,317	20,701	212	53	94	359	39·	8·5	6·	20·	4·	4·		
West Wheal Jewel	198	701	79	10	35	124	36·	8·	7·					
Wheal Gorland	498	3,574	53	12	21	86								
Wheal Unity Wood	3,204	17,420	206	80	138	424	80·	10·	7·5	20·	4·	4·		
Poldice	815	4,989	..	..	..	..	90·	10·	7·	20· 20·	4· 4·	4· 4·		
Carharrack, &c.	1,152	5,003	57	45	31	133								
North Downs	..	..	16	3	5	24								
Wheal Harmony, &c.	490	3,693	..	..	..	..	70· 40·	9·2 5·	7· 6·					
Wheal Mary and Wheal Parent	..	..	..	..	..	30	45·	7·	7·					
Hallenbeagle	1,104	5,010	122	20	50	192	36· 70·	7·7 10·	6· 8·					
Wheal Uny	..	..	..	..	..	146	70·	10·1	8·					

TABLE I. continued.

Mines.	Copper ore. Tons of 21 cwt.	Value.	Persons employed. Men.	Women.	Children.	Total.	Single-acting steam-engines pumping water. Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Steam-engines drawing ores, and working stamping-mills. Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Water-wheels. Diameter. Feet.	Width in breast. Feet.
REDRUTH DISTRICT continued.		£												
Wheal Andrew	..	..	7	..	2	9								
Wheal Busy............	669	1,802	34	50	28	112								
Wheal Amelia..........	..	..	4	..	..	4								
Bell	..	..	6	..	..	6								
Wheal Clinton..........	..	..	4	..	1	5								
Creegbraws	..	..	26	5	10	41								
East Downs............	..	..	6	..	2	8								
North Hallenbeagle	..	..	30	6	4	40								
Wheal Vyvyan	225	982	54	25	24	103				21·	4·	4·		
							85·	10·3	7·7	20·	4·	4·		
							80·	11·3	8·7	20·	4·	4·		
							65·	9·	7·5	20·	4·	4·		
Consolidated Mines	19,459	126,211	..	..	..	..	90·	10·	7·5	24·	4·	4·		
							90·	10·	7·5	24·	4·	4·		
							65·	9·	7·5	21·	4·7	4·7		
			1,730	869	597	3,196				22·	4·	4·		
							90·	9·	8·	20·	4·	4·		
							30·	9·	7·5	20·	4·	4·		
United Mines	4,359	28,544	..	..	..	..	85·	10·3	7·5	20·	4·	4·		
							85·	10·	8·5					
Treleigh Consols........	546	2,579	..	..	..	..	50·	9·	7·					
Cardrew Downs	306	1,643	24	6	10	40	66·	8·7	7·					
Carnon Stream..........	..	..	144	2	66	212	40·	8·	6·5					

TABLE I. continued.

Mines.	Copper ore. Tons of 21 cwt.	Value.	Persons employed. Men.	Women.	Children.	Total.	Single-acting steam-engines pumping water. Diameter of cylinder Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Steam-engines drawing ores, and working stamping-mills. Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Water-wheels. Diameter. Feet.	Width in breast. Feet.
THE ST. AGNES DISTRICT.		£												
Wheal Sparrow	134	570	31	..	..	31								
United Hills	4,010	20,691	269	90	..	359	{ 80·	10·	8·					
							{ 58·	8·3	6·5					
Wheal Prosper	..	..	10	..	4	14								
South Wheal Towan	1,771	9,260	..	..	..	..	40·	9·	7·					
Wheal Clifton	86	270												
Wheal Burrow	390	868	..	..	..	..	{ 64·	8·	6·					
							{ 58·	9·5	8·2					
Wheal Ellen	1,762	8,695	..	..	..	220	70·	10·	7·5					
Great Wheal Charlotte ..	659	2,340	..	..	..	..	60·	9·	7·					
Wheal Kitty	50	466	118	52	88	258	40·	..	..	32·	9·	8·		
Wheal Prudence........	916	3,730	40	20	13	73	33·	8·7	6·7					
Great Saint George......	5,774	27,097	255	35	50	340	{ 60·	10·	6·5	20·	5·	5·		
							{ 40·	9·	7·5	18·	4·	4·		
							{ 70·	10·	7·5					
Wheal Leisure	1,073	3,322	68	6	21	95	{ 70·	10·	8·	18·	4·	4·		
							{ 66·	9·8	7·7					
Wheal Budnick	..	..	99	41	32	172	36·	8·	6·	22·	6·	6·		
Polberrow	..	..	362	34	82	478	60·	10·	8·					
Polbreen	18	198	80	..	..	80	50·	10·	8·					
Perran Consols	..	..	80	14	6	100	60·	10·	8·3					
Wheal Elizabeth	116	601												

TABLE I. continued.

Mines.	Copper ore. Tons of 21 cwt.	Value.	Persons employed.				Single-acting steam-engines pumping water.			Steam-engines drawing ores, and working stamping-mills.			Water-wheels.	
			Men.	Women.	Children.	Total.	Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Diameter. Feet.	Width in breast. Feet.
St. Agnes District continued.		£												
Wheal Plenty	155	841												
Turnavoore	..	..	4	..	1	5								
North Towan	..	..	20	..	..	20								
Wheal Trevaunance	..	..	12	..	..	12								
Trebelzue	..	..	19	..	..	19								
Wheal Charles	..	..	10	..	..	10								
Wheal Clarence	..	..	10	..	..	10								
West Cliff Down	..	..	6	..	..	6								
Wheal Ceit	..	..	8	4	4	16								
Friendly Mines	..	..	8	2	2	12								
Wheal Pye	..	..	3	2	1	6								
The St. Austell District.														
East Wheal Strawberry	..	..	71	19	30	120	50·	9·	7·					
Polgooth	..	..	141	10	51	202	66·	9·8	7·4	27·	5·	5·		
St. Austell Hills	..	..	72	13	24	109	..	..	..	30·	6·	6·		
Carclaze	..	..	8	..	6	14								
North Clase	..	..	7	1	1	9								
Rocks	..	..	74	9	12	95	40·	8·8	5·2					
Carrygian	..	..	30	1	4	35								
Charlestown	..	..	431	120	263	814	50·	9·3	8·2	32· 18·	9· 4·	7· 4·		

TABLE I. continued.

Mines.	Copper ore. Tons of 21 cwt.	Value.	Persons employed. Men.	Women.	Children.	Total.	Single-acting steam-engines pumping water. Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Steam-engines drawing ores, and working stamping-mills. Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Water-wheels. Diameter. Feet.	Width in breast. Feet.
ST. AUSTELL DISTRICT continued.		£												
East Wheal Basset	..	..	..	..	..	100	70·	8·	8·					
Wheal Change	..	..	..	..	..	40								
South Polgooth	..	..	92	14	20	126	36·							
East Crennis	1,033	7,504	124	46	62	232	76· 41·	10·3 9·3	7·2 7·2	18· 16·	5· 4·	5· 4·		
Pembroke	196	1,204	75	12	52	139	50· 40·	9· 9·	7· 6·5	18·	5·	5·		
Fowey Consols[1]	15,354	85,434	1,057	308	315	1,680	80· 24·	10·3 8·5	9·2 5·5	18· 18· 20· 22· 22·	4· 4·	4· 4·	34· 30· 19· 27· 24· 24· 24· 27· 40· 30· 24· 14· 12·	4·5 3·5 4· 2·5 3· 3·6 1·7 6· 3·5 6· 4· 2·5 1·5
Wheal Union	101	423	..	..	..	..	40·	9·	7·					
Pentuan Stream	..	..	18	..	5	23	28·	8·	6·					

1 Hydraulic *pressure* engines.—One 24·0 inches diameter of cylinder, 30 fms. height of column.
One 28·5 ,, ,, 45 ,, ,,

TABLE I. continued.

Mines.	Copper ore. Tons of 21 cwt.	Value.	Persons employed. Men.	Women.	Children.	Total.	Single-acting steam-engines pumping water. Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Steam-engines drawing ores, and working stamping-mills. Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Water-wheels. Diameter. Feet.	Width in breast. Feet.
CALLINGTON DISTRICT.		£												
Holmbush	1,284	8,310	145	8	38	191	39·	7·	7·	18·	4·5	4·5		
							50·	9·	8·					
Redmoor	..	..	110	16	25	151	50·	9·	7·					
East Cornwall	..	..	6	..	..	6								
Cornwall Great United Mines	..	..	155	20	22	197								
Wheal Brothers	..	..	2	..	..	2								
Wheal Sisters	..	..	4	..	..	4								
Wheal Barnes	..	..	22	..	..	22								
Wheal Millpool	..	..	20	..	..	20								
South Caradon	140	1,198	..	..	..	..	24·	9·	6·					
Wheal Martha..........	..	..	26	10	4	40								
Phœnix	..	..	13	..	1	14								
Wheal Triumph	..	..	10	..	2	12								
West Wheal Tamar	..	..	45	..	..	45								
Gunnis Lake	..	..	62	7	19	88	40·	8·	6·	15·	4·	4·		
Tamar Consols	..	..	93	17	23	133	50·	10·	8·	20·	3·	3·	40·	2·2
							50·	9·	7·	18·	3·	3·		
													32·	6·
													26·	3·
													22·	4·
Wheal Franco	1,461	5,078	..	..	..	133	..	..	..	..	..	..	12·	6·
													14·	2·
													14·	2·

TABLE I. continued.

Mines.	Copper ore. Tons of 21 cwt.	Value.	Persons employed.				Single-acting steam-engines pumping water.			Steam-engines drawing ores, and working stamping-mills.			Water-wheels.	
			Men.	Women.	Children.	Total.	Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Diameter of cylinder. Inches.	Stroke in cylinder. Feet.	Stroke in pumps. Feet.	Diameter. Feet.	Width in breast. Feet.
CALLINGTON DISTRICT continued.		£												
Wheal Friendship	3,121	26,391	261	..	192	453	80·	10·	7·5	..	..	..	51· 50· 40· 32· 40· 26· 11·	10· 6·3 4·3 7·3 5·3 4·1 10·3
Wheal Betsy	..	..	57	..	8	65	..	..	..	..	..	..	42· 40· 40· 27· 14·	5· 4·3 4· 3·2 4·5
Wheal Pixon	..	..	19	..	8	27								
Birch Torr	..	..	87	16	14	117	..	..	..	..	..	..	40· 40· 32·	5· 4·5 2·7
Sundry small Mines in the different districts	1,067	3,906												

The foregoing table shows that the copper ore produced from the mines in Cornwall and Devon, within the year ending with June, 1838, was 151,554 tons, averaging $7\frac{7}{8}$ per cent of metal, and therefore containing 12,042 tons of copper. The average price of the ore was £5 : 18 : 4 per ton, and the Standard value of copper £109 : 3 : 0 per ton; giving a total value of £897,558 : 0 : 0.[1]

The quantity of tin obtained during the same time was about 5,130 tons;[2] and, as the mean per centage of metal in the ore was $65\frac{5}{8}$ (or $13\frac{1}{8}$ in 20),[3] it was yielded by about 7,817 tons of ore. The average price of tin during the year was about £90 per ton, making a total value of £461,700.

Mr. Taylor states the quantity of lead produced within the district to have been,—

In 1828	....	2,000 tons,[4]
1835	....	140 „ [5]
Sir H. T. De la Beche estimated it, in 1838, at	....	180 „ [6]
Mr. Courtney „ „	..	1,800 „ [7]

1 The quantities of copper ore obtained at various periods are particularized by Mr. Pryce, Mineral. Cornub., p. xi.; in the Corn. Geo. Trans., i.–ii.–iii.–iv.; by Mr. Taylor, Records of Mining, p. 169; by Sir Charles Lemon, Journal of the Statist. Soc., i. p. 70; by Mr. Courtney, Report of Royal Corn. Pol. Soc. (1838), p. 136; and by Sir H. T. De la Beche, Report, pp. 597–608.

2 Until Oct., 1838, all tin obtained in the Duchy of Cornwall paid a *duty* to the Duke, or to the Sovereign when there was no Duke:—that smelted in Cornwall of four shillings for 120 lbs.; that in Devon of one shilling and sixpence three farthings for 112 lbs. The weighing, necessary for ascertaining the amount of *duty*, supplied a record of the quantity, and since its abolition there is no means of discovering it with any degree of certainty.

3 For this information I am indebted to Thomas S. Bolitho, Esq., who also mentions that the proportion of metal in the ore has not varied more than 1 per cent. for several years past.

4 Records of Mining, p. 173. 5 Mining Review, No. ix. (1837), p. 36.

6 Report, p. 611. 7 Report of the Royal Corn. Polytech. Soc. (1838), p. 100.

I have some reason to depend on the accuracy of the last.

The quantity of iron ore obtained in Cornwall, in 1837, was estimated by Mr. Courtney at 30,000 tons;[1] considerable quantities were also procured in Devon: the whole produce of the district was probably not less than 40,000 tons per annum.

The (oxide of) manganese exported from Cornwall and Devon, in the period of our enquiry, was stated by Mr. Courtney[2] at from 700 to 1,000 tons, and by Sir H. T. De la Beche[3] at 5,000 tons:—the latter is probably the more accurate. At that time its average value was about £8 per ton, giving a total value of £40,000.

From 600 to 800 tons of (the oxide of) arsenic are probably produced annually in Cornwall:[4] in Devon it is at present disregarded, as an article of commerce.

In the year 1838, the china-stone exported from Cornwall was 7,344 tons,[5] and china-clay 20,784 tons.

Silver has been obtained at *Herland, Dolcoath*, and in the neighbourhood of Callington;—Cobalt, at the *Wherry Mine, Dolcoath*, and *Wheal Sparnon*;—Antimony, at Endellion, Saint Minver, Saint Ewe, and in several other parts of Cornwall;—Nickel, at Saint Ewe;—Bismuth, at Saint Just, Camborne, Gwinear, and the *Fowey Consols*; but, during the period of our enquiry, no profit was derived from any of those minerals.

---

1 Report of Royal Corn. Polytech. Soc. (1838), p. 101. 2 Ibid, p. 102.
3 Report, p. 610. 4 *Ante*, p. 86*. 5 *Ante*, p. 118.

Blende *(black jack)* and iron pyrites *(mundic)* have recently been worked to considerable extent, and several thousand tons of each have been exported; during the year 1837-8, however, they were unwrought.

The population enumerated in the foregoing table amounts to 28,522: but there are several mines,[1] of which we have no account, which employed, at least, 1,500 persons more: the total number of individuals labouring in the mines, in the year 1837-8, was, therefore, not less than 30,000.

I have not, in every instance, been able to obtain an exact account of the numbers of men, women, and children employed; but, as the cases in which I have procured every particular consist of mines in all the different districts, and comprize more than six-sevenths of the whole, I have some confidence in the accuracy of the proportions they indicate. In the mines particularized in the preceding table the men employed were 14,905,—the women 4,650,—and the children 4,650.

If we apply these proportions to the total number, it will give,—

Men	18,472
Women	5,764
Children	5,764
	30,000

[1] *Ding Dong, Wheal Leeds, Sydney Cove, Duffield, Wheal Tehidy, Wheal Tolgus, Wheal Harmony, Poldice, Treleigh Consols, Wheal Sparrow, South Wheal Towan, Wheal Burrow, Wheal Clifton, Wheal Plenty, Great Wheal Charlotte, Wheal Elizabeth, Wheal Union, South Caradon,* &c.

The average monthly wages of men during the year was about £2 : 12 : 6,[1] and of women and children about 14*s.* 6*d.*,[2] which gives a total of about £682,000 for labour alone.

The mechanical powers employed on the mines, at that time, were—

Steam-engines.

Diameter of Cylinder. Inches.	*Pumping water.*	*Working machinery for raising or stamping the ores.*
Not exceeding 20·	7·	77·
20· to 30·	21·	21·
30· „ 40·	33·	4·
40· „ 50·	25·	
50· „ 60·	21·	
60· „ 70·	20·	
70· „ 80·	18·	
80· and above	8·	
	153·[3]	102·[4]

Water-wheels.

Diameter not exceeding 20· feet	11·
20· to 30· „	13·
30· „ 40· „	13·
40· and above	7·
	44·[5]

[1] This average is obtained from Sir Charles Lemon's tables (Journal of the Statist. Soc., i. (1838), pp. 73–78), and my own enquiries in the different mining districts.

[2] Journal of the Statistical Society, i. (1838), pp. 80–81.

[3] There are probably not less than twenty steam-engines, of from 20 to 40 inches cylinder, pumping water from the various mines, which are not comprized in this account.

[4] I have been unable to obtain particulars of several steam-engines, probably not less than twenty in number, working drawing or stamping machinery on different mines:—few, if any, of them exceed 20 inches cylinder.

[5] There are a few water-wheels of large dimensions not included in this enumeration; but perhaps there are not fewer than 150 of from 12 to 20 feet diameter employed in working stamping machines, of which I have been unable to procure particulars.

The quantities and prices of the principal materials consumed in the mines, in the year 1837, have been ascertained by Sir Charles Lemon:[1]—they were—

Coals	56,860 tons,	@ £0 : 17 : 0 ℔ ton ..	£48,331
Timber	14,056 loads[2] ,,	2 : 12 : 0 ,, load ..	36,545
Gunpowder ..	300 tons,	,, 44 : 0 : 0 ,, ton ..	13,200
Candles	1,344,000 lbs.[3]	....	35,000

Although the foregoing particulars are probably close approximations to the truth, they cannot pretend to minute or perfect accuracy; as the produce of the mines,—the population employed,—and the materials consumed in them, are subject to continual fluctuation.[4]

---

1 Journal of the Statistical Society, i. (1838), pp. 81-82.

Sir Charles Lemon also gives the following account of the different materials used in the *Consolidated* and *Fowey Consols Mines* in 1836; which will aid us in obtaining an approximation to the total quantity of each article consumed in all the mines of Cornwall and Devon:—

	Consolidated Mines.	*Fowey Consols.*
Coals, tons	11,817	1,301
Iron ,,	108	90
Steel, cwts.	185	91
Tallow ,,	375	77
Ropes ,,	977	379
Candles .. lbs.	118,916	72,000
Gunpowder .... ,,	64,000	66,500
193 hides of Leather ,,	8,906	2,352
Norway Timber, cubic feet	49,091	45,928
American Pine ,,	2,190	1,376
,, Oak ,,	—	708
Patent half-inch chain, fms.	2,474	700
Pick and Shovel Hilts, doz.	13,098	664
Nails, &c., bags	91	53
Engine Shag (flannel), yds.	3,488	700
Oil, galls.	996	916
Safety-fuse for blasting	£ 962 : 10 : 0	£ 475 : 4 : 2
Foundry bills, Pumps, &c.	£1,735 : 0 : 1	£1,775 : 4 : 2
Books, Stationery, &c.	£ 50 : 6 : 7	£ 52 : 5 : 4

Ibid, p. 76.

2 Of 50 cubic feet.

3 This estimate I have obtained through the kindness of Mr. Higgs.

4 Full details of the produce,—population and machinery employed,—and coals consumed, in the mines between Chacewater and Camborne, in the years 1817 and 1818, are given in Mr. Thomas's Report, p. 75.

Iron, steel, tallow, leather, and ropes are also very important items in mining expenditure; but of the total quantity of these I have been unable to obtain accounts, or even estimates, entitled to much confidence.

W. J. HENWOOD.

4, Clarence-street, Penzance,
1843, March 30th.