VII.—*On the State of our Tin-Mines, at different periods, until the commencement of the Eighteenth Century.*

By JOHN HAWKINS, Esq. F.R.S., &c.

VICE-PRESIDENT OF THE SOCIETY.

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In a preceding communication, which has been read before this society, and has since appeared in their transactions, I have traced the uninterrupted working of our tin-mines during the decline and fall of the Roman Empire, and throughout the whole period of the middle ages. The evidence of this very important historical fact is principally founded on the uses of tin, and on the demand for it, combined with the remarkable circumstance, that Cornwall, during the above period, was the only country which produced that metal.

Having demonstrated in this way, the working of our tin-mines, for so long a series of ages, I shall now endeavour to point out the fluctuations, which have occurred in their prosperity.

I shall commence the enquiry by observing, that in the absence of almost all periodical records of the produce of these mines, we must be content with drawing our inferences, chiefly from such historical notices as have any direct, or indirect, bearing on the question before us; but without pushing these inferences any farther than the premises would warrant, or in other words, indulging in mere conjecture.

It is evident, I think, that the demand for tin, while it kept pace with the progressive civilization of Europe, must have varied with the political circumstances of the times. A state of war, for instance, between England and France, or the neighbouring countries, would occasion a temporary interruption of this commerce, and check the prosperity of the mines; while a long continuance of peace, and commercial treaties, such as those which Henry the Third concluded with the island of Gothland, and Edward the First with the Hanseatic towns, must have greatly promoted it.

An important change too, must have taken place in the state of our mines, when Cornwall ceased to form a portion of the Royal domains, and became vested in the eldest son of the monarch. A still greater, and a more favourable change, when a code of mining laws was enacted, and a court established for the local decision of all mining causes. Lastly, it is fair to conclude, that the right of preemption, which was occasionally assumed and abused by the Duke of Cornwall, must have had some influence on our mining system.

The result of the preceding inquiries has shewn, that the use of bells constituted the chief demand for tin, during the middle ages; and that a great revolution in this trade must have taken place in the 13th century, when a new demand for it was created by the employment of cannon. After that period, the very rapid advance of the civilization of Europe, must unquestionably have multiplied the uses of this metal to an astonishing degree, and given a new *impetus* to mining speculation. It is to this *impetus*, occasioned by the increased civilization of Europe, that we must attribute most of the improvements which have taken place in the art of mining, and in the processes of smelting. We owe many of these to Germans, and a few of them to our native ingenuity, particularly the most important one of all—the employment of steam.

Having thus taken a general view of the subject which is proposed for this inquiry, I shall proceed to examine the sources, from which a more positive knowledge of the history of our tin-mines may be derived.

To begin with the period of the Romans. However regardless they appear to have been of the interests of commerce, it is certain that they considered mines in a financial point of view, and that in every country which they had subdued, they encouraged the active working of them. We read of a Comes Metallorum, and of a College of Miners; and the traces of a very enlightened system of opening and conducting them, may be perceived in all

those ancient mines, which are decidedly of this epoch. There are numerous examples of Roman pigs of lead with inscriptions on them, which have been found in Derbyshire, in Flintshire, and in other parts of the island, where lead-mines have existed; which shew the result of this policy; and there is reason to think that they had worked some mines of English iron.

It is, therefore, not probable that after the conquest of the southern part of this island, the Romans should not have directed their early attention to a province, which having, for so many ages, supplied all the world with tin, was capable of contributing so largely to their fiscal revenue. Nor is the fact, which we are thus induced to admit on such indirect evidence, without some better support; for there are well authenticated instances of the discovery of Roman coins in our old tin-mines and stream-works.

I suspect that most of those very ancient works of fortification, which are scattered over the southern parts of this county, derive their origin from the Romans: and both the position of these works, in regard to each other, and their number, lead me to suppose that they must have been constructed with a view to secure the revenue, which they derived from these valuable mines and stream-works. I refer to the thirty-first sheet of the Ordnance map of England for the facts upon which I found this conjecture; and the connexion between the tin-mines and stream-works, and these fortifications, seems to be confirmed by the discovery, made a few years ago,

at the distance of about a furlong from one of them called Castle Zen, or Zends, in the parish of Veryan, of a block of tin of a singular form, which has on it an inscription in Roman letters.

The successors of the Romans were too far behind them in the scale of civilization, to uphold their system of civil administration; and the arts of mining, as well as of agriculture, must have declined, until the general introduction of christianity, and the active intercourse which took place with the capital of the christian world, had established a better order of things. Such was the civil condition of the Saxons, when Athelstan extended their conquests over the south-western parts of the island; but we have no evidence of their attention to mining affairs: nor, while the Danes continued to make their predatory descents, could the miners have held any intercourse with foreign merchants, or have found means to dispose of their produce. But the Norman conquerors, by uniting all the parts of the island under one government, restored this commercial intercourse; and it was then, if not before, that the Jews settled here, and eventually became the monopolizers of this lucrative trade.

It is not easy for us to decide, whether such a state of things was prejudicial or advantageous to the tin-mines; although the immense riches which Richard, King of the Romans, is said to have derived from them, would lead us to suppose that they were very flourishing at that period. The Jews indeed were stigmatized as usurers, and their

banishment under Edward the First, anno 1290, was in consequence of the religious feelings of the people, a measure of great popularity; but it proved, nevertheless, very injurious to our mining interests; for the Jews appear to have been the smelters of our tin, as well as its exporters; and the complaints which were made by the principal lords of the lands which abounded in tin, together with the loss which was sustained by the Earl in his revenues, after their departure, when, as Carew says, the mines were left unwrought, are said to have induced Edmund, Earl of Cornwall,* son of Richard, King of the Romans, to grant the tinners a charter, with sundry privileges, among which was that of a separate jurisdiction. In Carew's time this charter was no longer in existence: "howbeit," says he, "I have learned, that "in former time, the tinners obtained a charter from "King John, and afterwards another from King "Edward the First, which were again expounded, "confirmed and enlarged by Parliament, in the "fiftieth year of Edward the Third, and lastly "strengthened by Henry the Seventh, who granted "that no new laws affecting the tinners, should be "enacted by the Duke and his council, without the "consent of twenty-four persons, called stannators, "chosen six out of each of the four stannaries, or "mining districts, into which the county of Corn-"wall was divided;" and in this manner the tinners successively obtained all those privileges and immu-

* Who succeeded his father in the year 1272. The Charter was granted in 1305. Vide Tonkin's MSS.

nities, which have conduced so much to the stability of the tin-mines.

There can be no doubt that the intercourse, which Edward the First (1303) promoted and encouraged with the Hansetowns, must have given a new life, as well as a new direction, to the commerce of tin; that metal being one of the articles of national produce, which the merchants of those towns were allowed to export from England. It has also been proved in another place, that Bruges became the great *entrepot* of this commerce, and that it long continued to be so, until an intercourse was opened by sea with the great commercial republics of Italy.

But I must recur to some other political circumstances, which have had an influence in promoting or retarding the mining prosperity of this country; and one of the most important of these is the royalty of mines.

Although, in modern times, the Sovereigns of Europe have assumed an exclusive right to all the mines, which are discovered in their dominions; yet it is certain that this right was never exercised by the Romans. By the Roman law, the mines belonged to the owner of the soil in which they were found, and in uncultivated districts every one was at liberty to open them on his own account. A tax only on their produce was payable to the state. The right of the Sovereign to all metals, or what is called the royalty of the mines, appears to have originated in the constitutional form of the empire of the Franks, although it was not generally exercised until a much

later period. In process of time, it was gradually assumed or usurped by all the feudatory Princes of the German Empire, as they succeeded in establishing their independence; and it has since then been either formally or tacitly conceded to them.

A right so distinctive of feudal sovereignty, could not fail to become, sooner or later, the acknowledged law of Europe. It was first established in this island by its Norman conquerors, whose successors appear to have exercised it under some limitations, which were dictated by their policy, and well calculated to mitigate its severity. With regard, however, to the tin-mines of Cornwall, it was soon found to be both useless and impolitic to exercise this prerogative, and it was tacitly permitted to lapse to those who by the law of nature were best entitled to it.

The right of preemption, nevertheless, which is founded on the royalty of the mines, was reserved by the Duke of Cornwall as a part of his prerogative, and has never been formally abandoned. Its exercise has been often oppressive, of which Carew mentions an instance that happened in the reigns of Edward the Sixth, and Queen Mary; but the particulars are set forth more at length in Beare's MSS. and nearly in the following words. Gilbert Brookhause obtained, for a great sum of money, by a grant of Edward the Sixth, a lease of the Prince's right of preemption of the tin in Cornwall and Devon, for a certain term of years. This person associated with him Thomas Raydon, and soon appointing both sale and price, monopolized the whole trade. The

tinners deprived of the advantage of ready money, and oppressed by the lowness of the price, obtained redress in the first year of Queen Mary. But it appears that the Queen still reserved the right of preemption; Brookhause losing his cause, by a clause in the grant, which stated, that should the tinner's interest be prejudiced thereby, the lease should be forfeited.

At the time when Carew compiled his Survey of Cornwall, the tin-trade was in the hands of the London merchants, who appear, by his account, to have carried it on in a way very oppressive to the gentry, as well as to the miners. The former, he tells us, if they wanted money for a journey to London, were obliged to borrow it of the tin-merchants, with whom they were connected; upon which occasion a bond was given by them for the delivery of a thousand tin at the next coinage, for every twenty pounds received in money; although the price was usually from three to five pounds sterling higher. On the other hand, the tinner, when he wanted money, obtained it from the agents of the London merchants in Cornwall, upon terms apparently fair, but in reality still more oppressive; for although he entered into an engagement to return the lender as many thousands of tin as the money should amount to, according to the price agreed upon at the coinage; yet he was under the necessity of receiving a considerable portion of this money in meat and clothing, which articles in the settlement of accounts were charged at double their value. Nor were the

mining labourers in a better condition; for Beare, after enumerating all the wants of the tinner, and giving a statement of his small wages, exclaims, in the simplicity of his heart, 'O God! how can this man prosper!'

Such was the state of the mining interest here towards the close of the sixteenth century, when Carew compiled his Survey; but this was upon the eve of a great change for the better: for in the year 1601, there seems to have been both in and out of Parliament, a great cry against monopolies, and a bill was brought in for the purpose of restraining the royal prerogative in certain cases of letters patent. In Townsend's account of the proceedings of the four last Parliaments of Elizabeth, there is a report of the debate which took place upon that occasion, when, upon an allusion being made to the monopoly of tin, Sir Walter Rawleigh said, "I am urged to "speak in two respects: the one, because I find "myself touched in particular; the other, in that I "take some imputation and slander to be offered unto "Her Majesty, I mean by the gentleman that first "mentioned tin: for that being one of the principal "commodities of this kingdom, and being in Corn-"wall, it hath ever (so long as there were any) "belonged to the Dukes of Cornwall, and they had "special patents of privilege: it hath pleased Her "Majesty, freely to bestow on me that privilege "and that patent; being word for word the very "same the Duke's is. And because, by reason of "my office of Lord Warden of the Stannaries, I

" can sufficiently inform the house of the state " thereof, I will make bold to deliver it unto you. " When the tin is taken out of the mine, and mol- " ten and refined, then is every piece containing a " hundred weight, sealed with the Duke's seal. And " by reason of this privilege (which I now have) he " had the refusal in buying thereof, for the words of " the patent are, Nisi nos emere voluimus. Now I " will tell you, that before the granting of my patent, " whether the tin were but at seventeen shillings, " and so upward to fifty shillings a hundred, yet the " poor workman never had but two shillings a week, " finding himself. But since my patent, whosoever " will work, be tin at what price soever, they have " four shillings a week truly paid: there is no poor " that will work there, but may, and have that wages. " Notwithstanding, if all others may be repealed, I " will give my consent as freely to the cancelling of " this, as any member of this house." Townsend calls this a sharp speech, and notices the great silence which ensued.

The right of preemption continued to be exercised in the following reign: but it was not then in the hands of such a patriot; and as is usually the case with all those restraints on commerce, which have the vices of a monopoly, it was evaded. An instance of this is mentioned in a letter from the Lords of the Council to Sir Thomas Roe, our Ambassador at Constantinople, which is printed in Sir Thomas's negociations.—

" After our hearty congratulations, Whereas, com-

" plaint hath been made to the Prince his highness,
" and this board, by the farmers of the preemption
" of tin, that both His Majesty suffereth great loss
" in his customs, and that they are very much hind-
" ered by the secret exportation of tin in slabs,
" vessel in thick moulds, and into bars; whereof a
" great part is (as we are informed) brought to the
" ports of Constantinople, Aleppo, and Smyrna:
" although we have taken the best course we can
" here for the remedying of this abuse; yet we have
" thought good to pray and require you to take
" special care, that when any ships shall arrive in
" those parts, you cause diligent search to be made
" for such tin, brought without the licence of the
" farmers; and if any shall be found, to seize
" the same, satisfying the mariners for it, in some
" reasonable way; but not so as that they may be
" encouraged to use the like fraud afterwards.
" Wherein, as in all other things committed to your
" charge, we do refer ourselves to your approved wis-
" dom and discretion." Whitehall, June 26th, 1624.

Here we have another instance of the injurious exercise of this privilege; for it is evident that if the price of tin at home had borne any reasonable proportion to that, which it then amounted to in foreign markets, no such illicit trade, as is here described, could have existed.

Although the demands of the market, in those times, may be supposed to have been pretty steady; yet either the discovery of new and more productive mines, or of new improvements in mining and

metallurgy may have occasioned a surplus of tin-produce at particular periods, and, in such cases, a great depression. In emergencies like these it was natural to suppose, that the Crown, by the judicious exercise of its prerogative, might afford relief. Hence arose several petitions, some of which were complied with; but the good which was then effected was but temporary, because the privilege was exercised either without judgement, or abused.*

Having considered the political causes, which have had some influence on our mining prosperity, I shall proceed to notice the epochs of those improvements, which have taken place in our machinery, our processes of smelting, and the mode of working, as far at least as they can be traced in the very few manuscripts and printed works, which treat of this county.

Our monarchs appear, at a very early period, to have been impressed with a notion of the superior skill of the Germans, in the arts of mining and metallurgy; and an instance is given in the Fœdera, of a licence, or passport, granted by Henry the

* If to the various causes which I have pointed out, of the alternate prosperity and decline of our tin-mines, I could add an account of their absolute produce at various periods, little would be wanting to complete their history. It is probable that some valuable information of this kind might be supplied by the records of the Dutchy; and the labour of investigation, were it undertaken by a native of Cornwall, would be well requited. All that I can obtain from printed authorities, is as follows. In the 44th of Elizabeth, according to Dodridge, the coinage duty on the tin, in the County of Cornwall, amounted to £2,502 10*s.* 9*d.* As the duty was then forty shillings on every thousand, the whole quantity of tin raised, in that year, must have been 1,250 thousands, or 625 tons.

Fourth, in the year 1402, to three persons, under whom were thirty others, all of whom were coming hither from Bohemia, Hungary, Austria, and Mysia, for the purpose of being employed in the royal mines. German miners likewise were invited by Queen Elizabeth to come over to this kingdom, some in the third, and others in the seventh year of her reign. But although there are a few terms of German origin in the language of our miners to justify the supposition, we are not informed that any of the above-mentioned persons were sent into Cornwall. It is probable, however, that the royal patronage which was given to these foreigners, and the report of their superior skill, may have induced Sir Francis Godolphin to send for the person, who is mentioned by Carew under the name of Burchard Craneigh; by the aid of whom were effected all those important improvements, which he notices in the management of the great tin-works, belonging to that gentleman. The stamps, which he describes as being then in use, and which are undoubtedly a work of German invention, appear to have been but recently introduced; for we find that they had not wholly superseded the use of the crazing mill. I suspect too, that the use of charcoal was adopted at this time, for the fusion of tin, in the place of turf, which is mentioned as the usual fuel for that purpose, in the Charter of Edward the First, anno 1305, and which continued to be so used till the reign of Elizabeth.

Without doubt the improvements, which were introduced by Sir Francis Godolphin, constitute an

important era in the history of Cornish mining: they appear, however, to have been confined to the processes of dressing and fusing the tin-ores; at least no notice is taken by Carew of any other. It would be interesting to know, when the pump was first applied to the drawing of water out of our mines; for the work of Agricola must have made it known sometime earlier than the period here mentioned. A step, no less important, was gained by the introduction of the art of blasting rocks; but this is of a much later date, for I believe it cannot be traced in this county higher than the beginning of the last century; which is a century later than the period of its invention in Germany. It was most probably first introduced into this kingdom by Prince Rupert, who must have been well acquainted with the mode of working the mines of Germany, and for some years directed the affairs of the society of the mines royal. The practice, however, of blasting may have found its way here indirectly, either from Ecton or the Peak; and the following particulars, which I have extracted from some letters, which were written to me in the year 1792, by my friend the President, while they point out the value of traditional records, will shew how early we had directed our attention to these subjects of enquiry.

June 3rd. "On the subject of blasting, what I have been able to pick up, is far from satisfactory. I only learn, in general, that it was first introduced by a German, and used at St. Agnes. It strikes me as highly probable, that this German was Becher.

If I can collect any information at St. Agnes, where I may possibly go in the course of the summer, it shall be sent you. By means of my enquiries about blasting, a curious piece of intelligence has come to my knowledge, respecting the manner in which hard ground was *spent*, previous to the use of gunpowder. It seems that they bored holes, in the same manner as at present, excepting that the bit terminated in a quadrangular point, instead of the single edge. Into these holes were put two semi-cylindrical rods of iron, or steel, called feathers, just of an equal length with the hole; and then a steel wedge of the same length, was driven between the flat sides of the two feathers, which, sufficient care having been taken to bore the hole obliquely, broke off the rock piece-meal. This wedge was called a tearer. When the ground was more than usually hard, they had no other resource, than to wear away the face of the rock, in the same way as masons cut stone for building. A large quantity of these feathers and tearers were found at Balanoon, in Lelant; but unfortunately they have been all converted into gads."

August 17th. Speaking of a conversation, which he had held with an old man, called William Hockin, on the subject of Wheal Fortune mine, he says, "The account this man can give concerning the practice of blasting is not very particular. He has heard that it was introduced by the Germans, and that all other improvements in mining came from their country; but he does not know the time when, or by whom. He once worked in a mine, which

appeared to have been left off, on account of the hardness of the ground, before the use of blasting; where, by the help of powder, they paid one half tribute, and gained £3. 3*s*. 0*d*. a month. He has heard, that Poldice mine was worked by the father of the present old Mrs. Hearle's husband, and that at that time, there was no better machine for drawing the water than a chain pump. He remembers the first whim ever built in this part of the county, on Wheal Fortune. The engine there was the third. I am in great hopes of getting some good account of blasting from an old man in Zennor; but I have not been able to meet with him."

Sept. 22nd. "I have seen the old man from Zennor, and although the information he has to give, is far short of what we hope to procure, yet even this little may be esteemed curious. He remembers having heard from his father and other old men, that blasting had been first introduced by Germans, into the eastern part of this county; and that it was brought to the west (i. e. Lelant, Zennor, and St. Ives) in their time, by two eastern men, called Bell and Case, and was used by them in Trevigha bal; and that they affected to keep the mode of operations secret, suffering no one to see them charge the holes; till a man of Zennor, hiding himself upon a bolt, saw what they were about. This he thinks must have happened about ninety years ago. He observes that, for a long time, baked clay was constantly used for tamping, till at last other materials were found to answer just as well."

Great changes were wrought in all our mining concerns by these successive improvements; but towards the close of the seventeenth century, a great revolution must have been effected in the prosperity of our tin-mines, by the discovery of a method of smelting tin, by means of pit coal, in a reverberatory furnace.

To give an adequate idea of the extreme importance of this discovery, it is enough for me to observe, that the sole fuel, which, at that period, was employed in the process of smelting tin, was charcoal; which gradually becoming scarcer, as the wood-lands diminished, could not at last be supplied in sufficient quantity to meet the growing demands of the smelter. The quantity of tin, therefore, which was brought to market, must have been, for a century at least prior to the discovery of this new process, strictly limited by this growing scarcity of fuel from the native woods; and this check on the power of production, must have been felt more sensibly by the western mines and stream-works, than by the eastern.

We are indebted for this important discovery to the celebrated John Joachim Beccher, a native of Speyer, in the Palatinate, of whose life I have collected the following particulars.

He was born in the year 1635, and losing his father, when very young, he is said to have educated himself without the aid of preceptors; nature having bestowed upon him so much acuteness of intellect, that, as Gmelin truly observes, in the account which

he has published of his life and character, had he learned a better command of his passions, or more prudence in his conduct, and had he acquired more order and precision in his ideas, his scientific labours, and his pursuits, he would have been one of the most distinguished and useful writers of his time.

A great part of his life seems to have been spent in frequent changes of his abode, which he shifted from one city to another; whenever his presence could no longer be tolerated.

In 1666, the Elector of Mayence appointed him his public lecturer on the science of medicine, in the university of that city; and soon after, his body physician. He passed next into the Elector of Bavaria's service, where he was invested with the same office, and had the use of a well-furnished laboratory at his command; but here he got into difficulties, which compelled him to remove to Vienna, where he so strongly recommended himself to the favour and protection of Count Zinzendorff, at that time president of the Aulic Chamber, and through the Count, to the whole court, by means of his projects of finance and other measures, that he was nominated a member of the newly instituted chamber of commerce, and had the title conferred on him of Imperial Aulic Counsellor. But even here he made so many enemies, and incurred to such a degree the disfavour of the court, that he was ultimately obliged to consult his personal safety by withdrawing himself from Vienna, together with his wife and family. After this, he went to Holland,

and in 1678 settled at Haerlem, when, as he had before done at Vienna, he laid before the municipality of that city, a variety of projects for making gold, some of which they appeared much inclined to make a trial of.

Whether the result, however, of these trials and experiments did not answer the expectations, which had been formed, or the reward of them fell short of what he thought himself entitled to, or his enemies at Vienna, as he pretended, continued their persecution of him, or the air of Holland ill agreed with his constitution; it is sufficient to know, that his restless disposition drove him, in the year 1680, to this island, where, after visiting the mines and furnaces of Scotland, he proceeded, in 1681, to Cornwall. He died the following year in London, and with him perished the greater part of his numerous and unaccomplished projects.

The time, and the place of his death, are given on the authority of some letters of Frederic Heyn, which are prefixed to the collection of Beccher's smaller works. Gmelin says, that examples of the reputed transmutation of the metals into each other, formed the principal subject of his numerous writings; and the discovery of the means of converting other substances into gold, the study of his whole life; the prescriptions for effecting this latter object being in fact the ground work of all his romantic projects of finance.

It is, however, admitted by Gmelin, that the genius of Boyle had a great influence in giving a better

direction to Beccher's chemical pursuits, and this indeed is perceptible in his last work, the *Alphabetum Minerale*, where a commencement is made with some success, in applying chemistry to an explanation of the great phenomena of nature. The doctrines of Beccher have also laid the foundation of that system, which was formed afterwards, with so much ingenuity, by Stahl, and which subsisted until the days of Lavoisier. This is acknowledged by Stahl in his preface to Beccher's *Physica Subterranea*, his praises of which work he says, were uninfluenced by any personal acquaintance with the writer.

Were the merits of this man, says Gmelin in his history of chemistry, to be measured by the multiplicity of his writings, the variety of departments in which he laboured, and the high opinion he entertained of himself, he would certainly take the precedence of all the philosophers of his time. In reality, however, his childish vanity made him so much the object of ridicule, that, as it often happens, the world overlooked the favourable side of his character; and, moreover, the importunity, with which he pressed on the attention of the great, his projects of improvement, as well as the language, which he had the presumption to make use of, respecting the abuse of their power, and their manifold oppression of their subjects, exposed him to their enmity. From these causes he experienced so many mortifications and disappointments, that he was constrained to wander from one country to another, in

search of tranquillity; ending his life in the midst of all these conflicts with the world, in the fifty-seventh year of his age, and in a state of great destitution.

As the name of Beccher is so connected with the history of our mining prosperity, I have presumed to think, that the above particulars would be interesting; and I was in hopes, that they comprised all the evil, which could be said of him: but the love of truth obliges me to subjoin a much more unfavourable view of his life and character, which proceeds from a man who was personally acquainted with him, and whose veracity cannot be called in question. This man is the celebrated Leibnitz. But there is so much severity in what he says of Beccher, and there is something so disgusting in the picture, which he has drawn of his profligacy, that I forbear to communicate this curious document in a translation.

" Monsieur le Docteur Beccher, medecin, etoit d'un esprit excellent, mais si malin, que la mauvais surpassoit ce qu'il y avoit de bon; et on n'auroit pas eu de peine à l'engager d'empoisonner quelqu'un, ou à commettre quelqu'autre crime semblable. Il se vantoit de beaucoup plus qu'il ne sàvoit; par exemple, d'avoir fait à Vienne l'experience de projection, quoique dans une lettre à un ami, il en parla tout autrement. Il eût même l'effronterie de faire une traité *de la langue latine,* qu'il avoit peine à parler, et à ecrire même. Il donna aussi les *Tables de Medecine,* d'un certain auteur sous le titre d' *Institution de Medecine,* en les mettant seulement de

suite, et afin qu'on ne s'appercût pas de la fraude, il fit mettre les chiffres ou l'année de son livre, comme s'il avoit été imprimé quelques années avant celui de l'auteur même. Il persuada au *Compte de Hanau*, à qui on fut obligé de donner ensuite un Curateur, qu'il pourroit être un jour *Roy d' Amerique*, et ce Compte l'envoya chez les Hollandois, pour leur demander en fief quelques terres, qui n'etoient pas en leur pouvoir de lui donner; et à son retour, il fût recu du Compte au son des tambours et des trompettes. Il'demeura aussi quelque tems à Mayence, d'ou il passa à Munich, ou il obtint une charge de Conseiller de commerce, et dela êtant entrè au service de l'Empereur; et ayant dit des injures au President de la Chambre, il y fût mis en prison, d'ou il se sauva en sautant par la fenêtre. Il mourut enfin miserablement en Cornouaille, prostituant sa propre femme et sa fille à beaux deniers comptants. Mais quelques personnes charitables eurent pitié de la fille, en la retirant de ce mauvais train. Il m'ecrivoit peu de jours avant sa mort, pour lui faire obtenir une pension de la cour d'Hannovre; mais il ne reussit pas." This account of Beccher is published in the *Miscellanea Leibnitziana*, Lipsiæ, 1719; and it appears from some chemical memorandums of Leibnitz in the same collection, that he had a personal acquaintance with Beccher.

Beccher wrote his *Alphabetum Minerale* at Truro, not long before his death, in 1682. In the dedication of this tract to Mr. Boyle, there is the following passage. "Ignis usus, ope flammarum lithantracum,

stannum et mineralia fundendi, *Cornubiæ hactenus incognitus, sed à me introductus.*" In this statement Beccher lays claim to the entire merit of a discovery, which Pryce seems to think some other persons had anticipated: but this opinion is founded on some facts, which are by no means subversive of Beccher's pretensions, but rather corroborate them. The passage in the *Mineralia* to which I allude, is as follows. "Necessity at last suggested the "introduction of pit coal for the smelting of tin-"ore: and among others, to Sir Bevil Granville, "of Stow, in this county, temp. Car. 1. who "made several experiments, though without success. "Neither did the effectual smelting of tin-ore, with "pit coal, take place till the second year of Queen "Anne, when a Mr. Liddell, with whom Mr. Moult, "a noted chemist, was concerned, obtained Her "Majesty's patent for smelting black tin, with fossil "coal, in iron furnaces. The invention of reverbera-"tory furnaces built with brick, stone, sand, lime and "clay, soon followed this discovery; the form of "which, being simple, has admitted little improve-"ment to the present time."

Here we perceive that the date of Mr. Liddell's patent was long subsequent to that of Beccher's invention; and by the term *iron furnaces*, it is clear that blast furnaces are meant: the conclusion is obvious, that Pryce must have been in utter ignorance of the prior claims of Beccher.

It will be satisfactory to know, that some memorials of Beccher are still preserved on the spot,

which was the scene of his last labours. At Treloweth smelting house, in St. Erth, there is a tradition, that the first reverberatory furnace that was ever built in Cornwall, was erected at that place; and there is some reason to believe that Beccher resided there, for his grandson's widow died in the poor house of that parish about the year 1800. Both his son and his grandson are said to have been bricklayers, although I suspect that they were so denominated, on account of their having built all the furnaces in the neighbourhood. The name of Beccher has there been long corrupted into Baker.

Beccher brought with him into Cornwall an assistant, in his metallurgical labours, a German, whose name was Loeffler, and who marrying a Cornish woman, and settling at St. Erth, survived his patron many years. He was known by the name of Dr. Luffler; and a son of this man, who was christened Joachim, probably as a mark of regard for the memory of Beccher, died at St. Erth about the year 1768, in the humble situation of village-barber.