production of ſteam hinders not in the ſmalleſt degree the trickling of more water into F, and the continual production of more ſteam. This now preſſes on the ſurface of the water in CD, and cauſes it to rile gra­dually in the funnel BA ; but slowly, becauſe its cold ſurface is condenſing an immenſe quantity of ſteam. We may eaſily ſuppoſe that the water trickles faſter into F than it is expended in the production of ſteam; ſo that it reaches farther into the ignited part, and may even fall in a ſtream into ſome deeper pit highly ignited. It will now produce ſteam in vaſt abundance, and of pro­digious elaſticity; and at once puſh up the water thro’ the funnel in a ſolid jet, and to a great height. This muſt continue till the ſurface of the water sinks to BD. If the lower end of the funnel have any inequalities or notches, as is moſt likely, the ſteam will get admiſſion along with the water, which in this particular place is boiling hot, being ſuperficial, and will get to the mouth of the funnel, while water is ſtill preſſed in below. At laſt the ſteam gets in at B on all ſides ; and as it is con­verging to B, along the ſurface of the water, with pro­digious velocity it ſweeps along with it much water, and blows it up through the funnel with great force. When this is over, the remaining ſteam blows out unmixed with water, growing weaker as it is expended, till the bottom of the funnel is again ſtopped by the water increaſing in the cavern CBD. All the phenomena above ground are perfectly conformable to the neceſſary conſequences of this very probable conſtruction of the ca­vern. The feeling of being lifted up, immediately be­fore the jet, in all probability is owing to a real heaving up of the whole roof of the cavern by the firſt expanſion of the great body of ſteam. We had an accurate deſcription of the phenomena from perſons well qualified to judge of theſe matters who viſited theſe celebrated springs in 1789.

*STEAM-Engine,* is the name of a machine which de­rives its moving power ſrom the elaſticity and conden- ſibility of the fleam of boiling water. It is the moſt valuable preſent which the arts of life have ever received from the philoſopher. The mariner’s compaſs, the te- leſcope, gunpowder, and other moſt uſeful ſervants to human weakneſs and ingenuity, were the productions of chance, and we do not exactly know to whom we are indebted for them ; but the ſteam-engine was, in the very beginning, the reſult of reflection, and the produc­tion of a very ingenious mind ; and every improvement it has received, and every alteration in its conſtruction and principles, were alſo the reſults of philoſophical study.

The ſteam-engine was beyond all doubt invented by the marquis of Worceſter during the reign of Cha. II. This nobleman publiſhed in 1663 a small book intitled A Century of Inventions ; giving ſome obſcure and enigmatical account of an hundred diſcoveries or contrivances of his own, which he extols as of great importance to the public. He appears to have been a perſon of much knowledge and great ingenuity : but his deſeription or accounts of theſe inventions ſeem not so much intended to inſtruct the public, as to raiſe won­der ; and his encomiums on their utility and impor­tance are to a great degree extravagant, reſembling more the puff of an advertising tradeſman than the patriotic communications *of* a gentleman. The marquis of Wor- ceſter was indeed a projector, and very importunate and myſterious withal in his applications for public encou­ragement. His account, however, of the ſteam-engine, although by no means fit to give us any diſtinct notions of its ſtructure and operation, is exact as far as it goes, agreeing preciſely with what we now know of the ſub­ject. It is N⁰ 68. of his inventions. His words are as follow : “ This admirable method which I propoſe of raiſing water by the force of fire has no bounds if the veſſels be ſtrong enough : for I have taken a cannon, and having filled it 3/4ths full of water, and ſhut up its muzzle and touch-hole, and expoſed it to the fire for 24 hours, it burſt with a great exploſion. Having af­terwards diſcovered a method of fortifying veſſels inter­nally, and combined them in ſuch a way that they fill­ed and acted alternately, I have made the water ſpout in an uninterrupted ſtream 40 feet high; and one veſſel of rarefied water raiſed 40 of cold water. The perſon who conducted the operation had nothing to do but turn two cocks ; ſo that one veſſel of water being confir­med, another begins to force, and then to fill itſelf with cold water, and ſo on in ſucceſſion.”

It does not appear that the noble inventor could ever intereſt the public by theſe accounts. His character as a projector, and the many failures which perſons of this turn of mind daily experience, probably prejudiced peo- ple againſt him, and prevented all attention to his projects. It was not till towards the end of the century, when experimental philoſophy was proſecuted all over Europe with uncommon ardour, that theſe notions again engaged attention. Captain Savary, a perſon alſo of great ingenuity and ardent mind, ſaw the reality and practicability of the marquis of Worceſter's project. He knew the great expanſive power of ſteam, and had dilcovered the inconceivable rapidity with which it is reconverted into water by cold ; and he ſoon contrived a machine for raiſing water, in which both' of theſe properties were employed. He ſays, that it was entirely his own invention. Dr Deſaguliers inſiſts that he only copied the marquis’s invention, and charges him with groſs plagiariſm, and with having bought up and burned the copies of the marquis’s book, in order to ſecure the honour of the diſcovery to himſelf. Thia is a very grievous charge, and ſhould have been ſubſtantiated by very diſtinct evidence. Deſaguliers pro­duces none ſuch ; and he was much too late to know what happened at that time. The argument which he gives is a very fooliſh one, and gave him no title to conſider Savaryſe experiment as a falſehood ; for it might have happened preciſely as Savary relates, and not as it happened to Defaguilſers. The fact is, that Sa­vary obtained his patent of invention after a hearing of objections, among which the diſcovery of the marquis of Worceſter was not mentioned : and it is certain that the account given in the Century of Inventions could inſtruct no perſon who was not sufficiently acquainted’ with the properties of ſteam to be able to invent the machine himſelf.

Captain Savary obtained his patent after *having actually erected* ſeveral machines, of which he gave a deſcription in a book intitled The Miner’s· Friend, publiſhed in 1696, and in another work publiſhed in 1099. Much about this time Dr Papin, a Frenchman and fellow of the Royal Society, invented a method of diſſolving bones and other animal ſolids in water, by confining