

DEATH OF MR. NEIL SNODGRASS, C.E.

An extraordinary man has just been gathered to his fathers, Mr. Neil Snodgrass, whose death it is this day our painful duty to record was unquestionably one of the most inventive and remarkable geniuses of our time. The close of his brilliant but singularly unrewarded life, forms a fitting opportunity for doing public justice to those merits which enriched every one but himself, and which must forever unite the name of our deceased townsman and friend, with the history of the steam-engine, and of the rise and progress of the cotton manufacture in this country. Mr. Snodgrass died at his residence in South Portland Street, on the morning of Wednesday last, in the 73rd year of his age.

Of the early life of this eminent person we know comparatively little. He was, we believe, a native of Edinburgh, and was educated at the Ayr Academy, where he achieved high honours in mathematics. Although, however, enjoying greater advantages perhaps than Arkwright, he was like him almost entirely self-taught in those departments of mechanical science in which he was afterwards destined to excel. That he must have evinced, however, a very early capacity for comprehending



complex combinations of machinery is evident from an anecdote which he sometimes told, that the first watch he received when a boy he took entirely to pieces to the last wheel, and built it up again with perfect accuracy and success.

The first employers of Mr. Snodgrass were Messrs. George Houston & Co., Johnstone. This was about the year 1794. At that time cotton factories were heated by means of stoves, a process attended with many disadvantages, and it was while in Johnstone that the idea of employing steam for this purpose first suggested itself to Mr. Snodgrass. The late Sir John Robison of Edinburgh was likewise in the employment of Messrs. Houston & Co. at the period mentioned, and between the two young men, both of a scientific turn of mind, the project was often and earnestly discussed. In 1796, Sir John, then Mr. Robison, removed to the works of James Watt at Soho, near Birmingham, while Mr. Snodgrass proceeded to Glasgow to superintend the construction of the machinery for Messrs. Dale & Mackintosh's mill at Dornoch in Sutherlandshire, of which he had been appointed manager with a small share in the concern. The opportunity seemed favourable to Mr. Snodgrass for giving his steam-heating plan a fair trial and he urged its adoption in the Sutherlandshire mill with all



the energy he could command, but both Mr Dale and Mr. Mackintosh refused to lay out money on the experiment, in consequence chiefly of Mr. Kelly, the manager of the cotton mills at Lanark, and the inventor of the contrivance for moving the mule jenny by machinery, having been sent by Mr. David Dale, the proprietor, to Soho, expressly to consult James Watt on the subject, and having obtained an opinion from that eminent authority that it would not be found to answer, at least to any great extent, or in large tenements such as cotton factories. Mr Snodgrass, however, was convinced of the practicability of his invention, and in a correspondence with his friend Mr Robison continued to urge its claims in opposition to the views of Watt. Finding it impossible, however, to produce conviction in any influential quarter, Mr Snodgrass at length, in 1789, resorted to the bold course of fitting up the necessary apparatus in the Dornoch mill at his own personal expense and risk, and in that distant locality, removed from any kind of assistance, and in the teeth of the most formidable difficulties, he succeeded in accomplishing his purpose. The result, we need



not say, was triumphant. The triumph was if possible heightened by his receiving almost immediately afterwards a letter from Mr Robison giving, on the authority of Watt, an elaborate scientific calculation, to show that no saving of fuel or extent of heat could be obtained by the method proposed - that in the matter of steam. Mr Snodgrass could not both "eat his cake and have his cake" - that the plan, in short, could not possibly succeed, but that the steam tubes need not be lost as they could be converted into "rove cans!" Mr. Snodgrass was of course handsomely recompensed by Messrs. Dale and Mackintosh for his outlay, and not many years afterwards every factory in the country and many public works of different kinds, were heated on the steam principle. This was Mr Neil Snodgrass's first great invention, given gratuitously to the world, and for which his only reward was the gold medal unanimously voted to him in 1806, after two years' investigation, by the London Society of Arts!

Previously to Mr Snodgrass entering the field as a practical inventor, the art of cotton-spinning had, through the discoveries of Hargreaves, Arkwright, Crompton, and others,

attained a high degree of perfection. His quick eye, however, was not long in detecting the point where room still existed for improvement. The opening and cleaning of cotton and flax waste were performed by women with immense labour, and of course at proportionately heavy cost. Mr Snodgrass set his mind to work to remedy this defect, and the result was the invention of the "Scutcher" or "Blowing Machine", commonly called in cotton mills "the Devil", by which an important saving in the raw material is effected, while the cotton is prepared in a much more uniform manner than could possibly be done by the hands. The merit of this invention, first introduced in Sutherlandshire at 1802, and afterwards in Messrs. Houston's mills in Johnstone in 1806, was universally acknowledged, and Mr Snodgrass received many handsome and substantial testimonials from English and Scotch spinners, amongst whom was Mr Arkwright, who sent him, through the late Kirkman Finlay, Esq. then Lord Provost of Glasgow, a portrait of his father, Sir Richard Arkwright, accompanied with a highly complimentary letter, in which he stated, that, after



the inventions of his father, he esteemed those of Mr Snodgrass as the most ingenious and useful. This invaluable machine, sent forth unpatented, was Mr Neil Snodgrass's second great gift to the manufacturing interests of his country.

Either of the two inventions we have named should have sufficed to make not only a reputation but a fortune, It is, however, in connection with the steam-engine that the name of Mr. Neil Snodgrass chiefly deserves to live. Notwithstanding Watt's grand invention of the separate condenser, and the completion of his numerous other improvements, a mighty defect still existed at the very heart of the machine. How to render the piston of the steam-engine perfectly steam-tight and yet capable of moving in the cylinder without enormous friction was, in the early history of the invention, felt to be an insuperable difficulty. This difficulty would have been considerably lessened had it been possible to construct a perfectly true cylinder, but as no skill in workmanship could secure this necessary height of perfection, the only alternative remaining was to render the periphery of the piston elastic, so as to adapt itself to the inequalities of the surface against which it was to slide. To effect this object



the piston was constructed with an upper and lower flange, between which a mass of hemp was wound, which it was necessary to renew and tighten at frequent intervals, and to keep at all times profusely saturated with grease. In order to provide a substitute for this primitive and clumsy process, Mr Snodgrass passed many a night of anxious thought. At the urgent desire of Messrs. Houston & Co. he had returned to Johnstone in 1804, to take the management of their extensive mills. From this place, year after year, he witnessed the adoption of his Sutherlandshire inventions all over the country, and found his name rising to a high place in the roll of those gifted men who had enlarged the boundaries of mechanical science, and made important contributions to the industrial wealth of the nation. Thus encouraged, his active mind was continually busy with some new problem in mechanics, and having in 1818, with the assistance of a number of master-spinners who had profited by his inventions, built a mill of his own at Mile-end, Glasgow, he commenced in 1823 to make experiments in packing the piston on an entirely new plan, and, in 1824, his splendid invention of Metallic Packings was given gratuitously to the public. These packings consisted

of segments of metal acted upon by springs pushed outward from the centre and thus adapting themselves to the inequalities of surface unavoidable in the cylinder. This novel and beautiful invention of an elastic metal piston shared, for a time, the fate of many discoveries destined to revolutionise the world. It was ridiculed and discredited. Men of eminent practical skill predicted that it would not work, and even asserted that the cylinder would fly in pieces. After encountering much opposition, Mr Snodgrass prevailed upon the late Dr. Stevenson (a most enterprising man, and steady friend of the inventor) to allow the experiment of the Metallic Packing to be tried in the Caledonia steamer, then plying between Glasgow and Helensburgh, and of which the worthy Doctor was proprietor. On a certain memorable day, the elastic metallic rings having been constructed in Mr Robert Napier's Vulcan Foundry, Mr Snodgrass repaired to the Garsloch to have the invention introduced, amid many shrugs of incredulity and many predictions of failure. Dare we say that the inventor was wholly without his reward when we reflect on the pride he must have experienced on witnessing the little Caledonia - we



remember the vessel well - steaming sweetly and gallantly up the river, as no steamer had ever done before, even in this the very cradle of steam navigation? From that day to the present time no other description of piston has been constructed. The invention was immediately adopted in several other steamers belonging to Dr Stevenson; Henry Houldsworth, Esq. of Coltness at once recognised its advantages, and employed Mr Snodgrass to introduce it into thirty different engines; it spread into England under new forms, until a confusion gathered about its very origin; in every country in the world in which the steam giant has been subjugated to the purposes of man, it now forms as essential a part of the machine as any of the improvements of Watt. Its value is altogether incalculable. It is supposed that in the Clyde alone the saving it has effected in the mere article of tallow amount to not less than £20,000 per annum. The importance of the invention has been prodigiously increased by the introduction of the railway system, as the old pistons would have been totally inapplicable to the locomotive. This constituted Mr Neil Snodgrass's third and greatest boon to the manufacturing and commercial world, and beyond the barren fame



of the invention - and not always did he receive even that - his sole profit, if we except the premium that was awarded to him in 1825 by the Glasgow Town Council, from Coulter's Mortification, consisted in his being employed to manufacture some fifty metallic packings at the rate of 5s. per inch of the diameter of the respective piston!

We have dwelt at some length on Mr Snodgrass's three great inventions; but in the course of his long and laborious life, he introduced a variety of minor improvements in machinery, many of which continue, we understand, in general use. Among these we may mention a new application of the Mendoza pulley and wheel for leading out the mule spinning carriage; a new plan of skeleton bars for furnaces; and an apparatus for the prevention of smoke on the argand principle. Mr Snodgrass also claimed to have anticipated Mr Dyer of Manchester by two or three years in the present arrangement of the tube roving frames, for which the latter obtained a patent by which he is said to have cleared £50,000. On minor or disputed improvements however, we need not dwell. His three principal inventions are enough for one man, or for one life. They are the tripod



on which his fame may securely rest. We have seen a declaration, signed by nearly all the leading cotton-spinners, machine-makers, and engineers in Scotland, in which the benefits conferred on the United Kingdom by these inventions are estimated at not less than from £15,000 to £20,000 per week! The inventor alone failed to profit by the creations of his own sleepless brain. In some respects he was unwise, if to be wise is to be selfish; and, in other respects, he was unfortunate. His mill at Mile-end was on three several occasions destroyed by fire; and in 1825, and again in 1830, a general crash among the cotton-yarn agents in this city reduced him to complete ruin. Some time afterwards, Mr Snodgrass went to America, in the hope of bettering his fortunes. He received in the United States the friendly welcomes and the generous tributes due to scientific genius of a high order, and personally superintended the first introduction of the metallic packing in the steamers on the Hudson and other Transatlantic rivers. In the course of a year, however, he was induced to return to Scotland, but the promises which recalled him to his native land failed to be realised. It was a subject of continual regret amongst his friends that



he had never taken out a patent for any one of his inventions. His family saved him from the fate of Hargreaves - The Government neglected to bestow upon him the reward of Crompton.

Had he filled his pockets by successful gambits on the stock exchange the servile crowd might have augmented his riches; had he declaimed powerfully from political platforms, the applauding multitude might have loaded him with princely largess; - but because, from the twilight of the workshop and the seclusion which genius covets, he was content to lavish the riches of science on his country, and help it to feed its millions, to maintain its credit, and to fight, if need were, its battles, his life was permitted to be a life of unceasing struggle, and his age to decay amidst a wreck of unfulfilled hopes.

In private life, Mr Neil Snodgrass was a man whom to meet once was to remember ever afterwards. His wiry frame, his military collar, his smart pale face, his keen restless eye, and his unbounded animal spirits, rendered him in every way remarkable. His hair was blanched with age, but his heart



was buoyant with youth. He may be said to have conquered misfortune by the courage with which he endured her shafts. Until his last brief illness, arising from congestion of the brain, he continued in all bright circles to be the brightest. Wherever he went, he was welcomed, for his enjoyment was of that hilarious kind which is eminently self-diffusive. His gaiety was without frivolity, and his wit without malice. He snatched a jest with the same observant quickness with which he seized upon a happy idea in mechanics, and thus his lightest conversation evinced the same genius which had led to his scientific triumphs. His leading characteristics were keenness, zeal, determination - a perseverance to subdue all difficulties, and a hope which no obstruction could daunt. The extremely sanguine character of his temperament was stamped on every feature of his countenance. Such was the man whose career we have thus briefly and imperfectly traced. He lived not for himself but for his country. Beyond the teachings of a shrewd wisdom and the example of a pure life, he has bequeathed nothing to his children but his fame. We are prompted only by our own sense of what is due to his



great claims, when we venture to express a hope that the Government of the nation he has enriched may yet do his memory the tardy justice of rendering that inheritance less barren.