

CHAPTER XVI

LIVES OF THE ENGINEERS, AND OTHER WORKS

I LED a double life at this time—my life at the office and my life at home. Many men of business do this. After a day's labour they look forward to pleasure—to domestic comfort, to evening enjoyment, to exercise and change of occupation, and to work that is grateful instead of work that is worrying. It was my practice, at the time of which I write, to wind up the day by a game of billiards with one or other of my sons. It was a capital exercise—rather tiring, and not too exciting—before retiring for the night.

A wise man accumulates his force by means of rest. Seeming idleness is not all idleness. It means recuperation. A man enjoys his rest all the better because of work; and he will do his work all the better because of rest. In fact, we must rest in order to work. At the same time, change of occupation is often equivalent to rest. Hence Fénelon said, "*Le changement des études est toujours un délassement pour moi.*" Many brain-workers have recognised the truth of this idea.

I had always plenty of intellectual amusements and occupations to fill up my leisure hours. I had enough work mapped out to fill up many years. If

I could not accomplish it, some one else would. No matter : there was always something to look forward to in hope. I even found that the intervals of busy life might be more favourable to effective study than altogether unbroken leisure. I pursued knowledge as a recreation, during the spare hours of an active official career. My mind was active, in my journeys to and from the office, or during my walks on Blackheath or in Greenwich Park ; and my thoughts had often become fittingly clothed with words, without a conscious effort, before I sat down to write.

After it had been ascertained that I could write a satisfactory book, I received many proposals from publishers and others to undertake some special work for their house. But I kept free of all such engagements. I desired to use my leisure in my own way, and to be perfectly untrammelled in all that I did. I accepted, however, Mr Murray's invitation to write a few articles for the *Quarterly Review*. Of these, the "Difficulties of Railway Engineering" appeared in January 1858 ; and the articles on "Iron Bridges," and on "James Watt" in July and October of the same year. Mr Robert Stephenson supplied me with some of the materials for the article on "Iron Bridges."

I had some conversation with Mr Stephenson as to the work which I next thought of writing—*The Lives of the Engineers*. He was a good deal surprised at the general applause with which his father's Life had been received. It was what he had scarcely expected ; and yet, no doubt it had arisen mainly through my not overlaying it with too many engineering details, and bringing out, as much as possible, the human and individual character of the

Man. Still, he doubted whether I could rely upon the same element of success in the lives of departed engineers, who had died and left scarcely a trace of their history—left little or nothing behind them but their works. Still, I thought it possible that some interesting reminiscences of personal life and character might yet be collected and preserved for the benefit of others.

On prosecuting the inquiry, I found the subject to be exceedingly attractive. The events in the lives of the early engineers were, for the most part, a succession of individual struggles, sometimes rising almost to the heroic. In one case, the object of interest was a London goldsmith, Myddelton—the first engineer who supplied London with pure water; in another, he was a retired seaman, Captain Perry—one of the earliest marsh drainers; or a wheelwright, like Brindley, the great unlettered giant, who became the first English canal maker; or an attorney's clerk, like Smeaton, who built one of the first great lighthouses as a finger-post of the sea, on the Eddystone Rock; or an instrument-maker, like Watt, who invented the practical working steam-engine; or a millwright, like Rennie, the constructor of the noblest modern bridges; or a working mason, like Telford, who afterwards became a sort of Colossus of roads.

All these men were strong-minded, resolute, and ingenious men; impelled to their special pursuits by the force of their constructive instincts. In most cases they had to make for themselves a way; for there was none to point out to them the road, which, until then, had been untravelled. Indeed, there was almost a dramatic interest in their noble efforts, their temporary defeats, and eventually their

triumphs; and their rising up, in spite of manifold obstructions and difficulties, from obscurity to fame.

But how to clothe these biographies with personal interest? This was a matter of much difficulty. But I did what I could. I placed myself in communication with all who were likely to give me information. I spent the few brief holidays I could snatch from my daily labour, in visiting the sites of the great engineering works. I went over the New River as far as Ware in Hertfordshire. This I could do on a summer Saturday afternoon. I went down to Brading Haven in the Isle of Wight, and made a sketch of Myddelton's great embankment; and I afterwards spent an Easter holiday in visiting Myddelton's birthplace at Galch Hill, near Denbigh, North Wales.

By careful inquiry, I was enabled to collect a great deal of new and curious information about Brindley. I visited his works, on my way to and from Wales, together with his last residence at Turnhurst, and his burial-place at New Chapel in the same neighbourhood. I spent the holiday of another year in visiting the birthplace of Telford in Eskdale, north of the Scottish border; and there I found a great deal of new information about that distinguished engineer. The same with Greenock, the birthplace of Watt; and Phantassie, in East Lothian, the birthplace of Rennie. Wherever information was to be had, I endeavoured to obtain it.

I could not read at the British Museum myself, or at the State Paper Office, or at the Corporation Records of the City of London; but I obtained the help of some excellent readers and extractors of

evidence. The best of these was Mr W. Walker Wilkins (since dead), to whom I was under great obligations. Mr Martin, editor of *The Statesman's Year-Book*, was also of great use to me. After the death of Mr Wilkins, I wished to have some assistance at the British Museum and at the City Record Office; and observing the advertisements of several ladies in the *Athenæum* as readers, I engaged one of them. I found her of no use; then I engaged another; and after that a third. But I found that the great defect of ladies' help was incompleteness and inaccuracy. They neglected dates and references. They could not even copy correctly. They had no originality, and could not follow up a track of investigation. So that I had to go all over their work again to secure accuracy; and as doing the work twice over was of no use, I finally gave them up. I hope that Girton and Newnham will do something to educate ladies in attention, accuracy, and thoughtfulness.

In the case of both Wilkins and Martin, they could follow out a special line of reference; would consult book after book to obtain the proper authentic information; and copy accurately, with correct references down to the exact page and edition of the book copied from. Martin, though a foreigner (I believe a Russian, as he had the true Sarmatian features), had a true love of English literature, and an extensive knowledge of books.

In writing out the lives of Boulton and Watt, I had the advantage of consulting the whole of the literature of the firm—in the shape of the immense number of letters in the possession of the grandson of Mr Boulton, the present occupant of Tew Park, Oxfordshire. These were kindly sent to my house,

and I consulted them at my leisure. I also visited all the scenes described in their story, at Birmingham, at Handsworth, as well as in Scotland, and in Cornwall. While making inquiries on the subject of Dr Roebuck's early connection with James Watt as to the invention of the steam-engine, I bethought me of my former acquaintance with John Arthur Roebuck, and wrote to him on the subject. The following was his answer:—

“19 ASHLEY PLACE,
“12th January 1858.

“MY DEAR SIR,—

“I have been absent from home for some time, and only returned last Saturday, so that I have been unable before to-day to answer your letter of the 28th of December last. I pray you to excuse this.

“I am sorry to say that I have no information respecting Dr Roebuck's connection with Watt. We Roebucks were always a race of Ishmaelites, and in our wanderings we have seldom paid much attention to family records. The misfortunes which deprived Dr Roebuck of the material benefits to be derived from the steam-engine, deprived him also of any honour to which he might be entitled from the same source; and this has rendered the subject a sore one to our family. Dr Roebuck's share in the transactions connected with the steam-engine will never be known; for mere family traditions will not pass for history. The last member of Dr Roebuck's family (Mrs Stuart), died in Birmingham, I think in 1836; and she was accustomed to dwell upon the merits of her father, in language that would surprise those who attribute to Watt the exclusive merit of the discoveries and inventions made in connection with the steam-engine. But I, knowing how useless would be any attempt of redistributing that merit, paid little attention to her reclamations.

“Accept, I pray, my thanks for all that you have done, and believe me, very truly yours,

“J. A. ROEBUCK.”

I placed my various friends under contribution while writing the lives of Telford and Rennie, and among other letters I received the following from the late Peter Cunningham:—

“25 ARLINGTON STREET, 11th July 1860.

“MY DEAR SIR,—

“My father knew Telford, but that was all. Out of his skill as an engineer, I remember this much about him. When a Dumfriesshire lad, he addressed a poem, not without merit, of poetic advice, to Robert Burns; and when he made his will, and his fame as an engineer was fixed, he left £500 to Southey, and £500 to Tom Campbell.

“Of Rennie I recollect this story, which I have often heard my father tell; Rennie having told it to him while sitting to Chantrey, for what proved to be one of that sculptor's finest busts. The great engineer was being carried in a coach and four to his estate, for some engineering purpose. At the fourth change of horses, the near side wheeler cast a shoe. The roads had received no mending from General Wade or Macadam, and it was found necessary to pull up at the nearest forge. The Vulcan of the village was drunk at a distant alehouse. Luckily, the forge was alight, and all that a farrier wants was about. The man who gave us Waterloo Bridge set to in a workmanlike manner. A fresh shoe was forged and was soon shod on the horse's foot. Smack went the whip, and quick the spurs; and the coach again sped off. My lord,* who was familiar and loquacious with Rennie before the forge adventure, became distant and silent towards the end of the journey. My lord could not travel in a coach and four with a man who could blow a bellows in a smithy, strip to the shirt, hammer Nasmyth-like on an anvil, shoe a horse, and make

* Presumably a fellow-traveller—his fellow-travellers, according to the version elsewhere adopted, were two “Paisley boddies.” See *Lives of the Engineers*, p. 379.—ED.

good for his own advantage what Self-Help alone can do.*

“Would not this be a good motto for that book—

“He either fears his fate too much,
Or his deserts are small,
Who would not put it to the touch,
To gain or lose it all.—

‘MARQUIS OF MONTROSE.’

“Sir Walter Scott delighted in these lines, when Self-Help was his only resource.—Ever yours truly,
“PETER CUNNINGHAM.”

Before the first two volumes of the *Lives of the Engineers* were published, Robert Stephenson died. He never recovered from the results of his visit to Norway in 1859. I was desirous of completing his life, and adding it to that of his father, and wrote to Mr Bidder, one of his executors, to that effect. I was under the impression that the two men, father and son, were so intimately associated in life, that they could not well be treated separately. Mr Bidder, however, took another view. He wished an elaborate Life of Robert Stephenson to be published, and he made applications to several eminent literary men, amongst others, to the late Sir Arthur Helps. He then applied to me, through Mr Manby. I could not undertake to go again over the same ground; and besides, I was already sufficiently occupied with the work in hand. Mr Bidder eventually succeeded in obtaining the assistance of two eminent gentlemen, and the life was published in two large octavo volumes.

* I give this anecdote as related by Peter Cunningham. But Mr Rennie's son, the late Sir John Rennie, C.E., gave me another version, which I accepted as probably the more authentic.

Nevertheless, I finished a summary of the life of Robert Stephenson, and published it with that of his father. Though Robert was an excellent man, and a famous engineer, he himself admitted that "all that he knew and all that he had done was primarily due to the parent whose memory he cherished and revered." And the son was right in his idea of the powerful originality of his father. In estimating the two men, George Stephenson will always stand the first.

I was also requested to write the Life of Mr Brassey, the eminent contractor; but this I declined for the same reason—that my hands were full. The work was eventually done—and well done—by the late Sir Arthur Helps. After the death of Mr Bidder, I was also solicited to write his life; but I did not see my way to undertake it—nor the life of my good friend Mr Sopwith, who left behind him many manuscript volumes of recollections. Both these biographies still remain to be written. The only engineers I wished to add to my collection were the two Brunels; but, on communicating with Mr Hawes, I found that the family preferred that the memoir of the lad engineer, Isambard Kingdom, should be written by his son; and there I left the matter. I contented myself with writing a review of the lives of the father and son in the *Quarterly Review*, No. 223.

I may briefly state that the two volumes of the *Lives of the Engineers*, when first published, were well received. The *Saturday Review* expressed surprise "that the idea of handling the subject of engineering in this manner should not sooner have been seized. No one but a professed engineer could wade through the minute professional details of a

severe history of engineering ; and yet the subject is one in which all the world, in this mechanical age, takes a deep interest, and which only required to be presented in a biographical shape to be cordially welcomed." Although each of the four volumes was sold at a guinea, principally because of the large expense incurred in illustrating the work, 6000 copies of the first two volumes were sold within a comparatively short period ; and the remaining volumes were also issued in about the same numbers. Since then, the book has been issued in five volumes at a much reduced price.

Mr Gladstone was especially pleased with the book on its first appearance. Shortly after receiving a copy, he sent me the following letter :—

" 11 DOWNING STREET, 7th February 1862.

" DEAR MR SMILES,—

"As 'good wine needs no bush,' much less does any work of yours, which you do me the honour and kindness to present, need any apology. I have begun to read, with great interest, your important work, and I hope to peruse it, although in little fragments, each as a composing draught, at midnight hours. Pray accept my thanks.

"It appears to me that you first have given practical expression to a weighty truth—namely, that the character of our engineers is a most signal and marked expression of British character, and their acts a great pioneer of British history.—I remain very faithfully yours,

" W. E. GLADSTONE."

Mr Gladstone afterwards did me the honour to speak of the work—especially of the life of Brindley—with much commendation, at a public meeting in Manchester ; and Sir Stafford Northcote did the same at a public meeting in Exeter. Industry is,

indeed, of no party; and men of all classes could well unite in celebrating the triumphs of British Engineering.

Two years after the appearance of the *Lives of the Engineers*, I published what may almost be considered a supplement to them: I mean the *Lives of the leading Mechanical Inventors* under the title of *Industrial Biography*. In the preface to that book, I endeavoured to vindicate myself against critics, who might think I had treated a vulgar and commonplace subject. History, no doubt, deals with the affairs of courts, the deeds of statesmen, and the exploits of warriors, and takes but little heed of inventors or mechanics, on whose industrial labours civilisation and history of the best sort mainly depends, but without exaggerating the importance of this class of biography, I insisted that it had not yet received its due share of attention. While commemorating the works and honouring the names of those who have striven to elevate man above the material and the mechanical, the labours of the important industrial class, to whom society owes so much of its comfort and well-being, are also entitled to consideration. Without derogating from the biographical claims of those who minister to intellect and taste, those who minister to utility need not be overlooked. Thus, when a Frenchman was praising to Sir John Sinclair the artist who invented ruffles, the baronet shrewdly remarked that some merit was also due to the man who added the shirt.

I had the best possible assistance. The best mechanics then living were ready to help me. The late Mr Penn and Mr Field communicated a great deal of useful information relative to Bramah, Clement,

and Maudslay, and to the introduction of the slide-lathe, planing-machine, and self-acting tools. The late Sir William Fairbairn of Manchester sent me his Autobiography, from which I selected most important extracts; and Mr Nasmyth gave me his most interesting recollections, not only as to Maudslay, his friend and master, but as regards his own masterly invention of the steam-hammer.

The early part of the book contained much information as to the early use of metals in the history of civilisation; first of copper and bronze, then of iron, and lastly of steel. When the book was finished, I sent an early copy to Mr Gladstone; and though immersed in work, he yet sent me, out of his abundant and overflowing knowledge, the following interesting communication:—

“HAWARDEN, 5th November 1863.

“MY DEAR SIR,—

“Pray accept my best thanks for your volume. I need not say that I anticipate from it much pleasure and advantage. Indeed, it is not all anticipation, for I have begun. And I would observe that I know not whence Mr Mushet obtains warrant enough for his proposition that a knowledge of the mixture of tin, zinc, and copper, seems to have been among the earliest discoveries of the metallurgist. Does he mean—what, indeed, seems to be rather commonly, but, as I think, rather strangely, assumed—namely, that mixed metals were used before pure ones? In Dr or Professor Wilson’s books, it seems to be chiefly shown that a proportion of the utensils which have been *lumped* together as ‘bronze’ are really of copper only. Inquirers have not yet, I think, made use enough of the one great literary witness to the usages of a primitive age. Homer belongs to a period between Stone on the one hand, and Iron on the other. With him, the use of Iron is

just beginning. And it is, I think, very doubtful whether he knows anything of the mixture of metals, though he was familiar with the idea of fusing them. If his *χαλκος* means bronze, then it is surely a strange fact that he has no word for Copper, which must have been a very common metal; while he has a word for Tin, which was a very rare one, and of which he often mentions the single, but never the compound use.—Believe me, very faithfully yours,

“W. E. GLADSTONE.”

Let me also give another letter from Mr Cobden—the last I received from him. I had occasional opportunities of meeting him in London, though I had never an opportunity of meeting him at his house at Midhurst, to which he kindly invited me. The only occasion on which I saw the place was when I attended the funeral of the great free-trader, about eighteen months later.

“MIDHURST, 8th November 1863.

“MY DEAR SIR,—

“Pray accept my thanks for your very interesting volume. It is very gratifying to me to be remembered by one for whom I have always entertained a high respect. I have observed with much interest the direction in which you have employed your pen. The field has been a new one, and peculiarly suited to your powers. I venture the prediction that not only an enduring but an increasing renown will attach to the memoirs of these ‘Captains of Industry’ whose biographies you have recorded; for it cannot be doubted that each succeeding generation will hold in higher estimation those discoveries in physical science to which mankind must attribute henceforth so largely its progress and improvement. It is not to me—whom George Combe discovered to possess a large bump of ‘veneration’—an agreeable thought, but I sometimes suspect that the world will be indebted for its civilisation, and for the amelioration of its international relations, less to those pre-

cepts of religion which every nation disregards when convenient, than to the progress of physical science, whose laws will bind all countries in equal and inevitable subjection. That is, however, a wide question; and I should like to make it the text for a gossip with you on the neighbouring South Downs. Again thanking you for remembering me, believe me, yours very truly,

“R. COBDEN.”

Some people wondered how I contrived not only to perform the secretarial work of a large company, but to write books requiring a good deal of labour and research. I remember once giving this explanation. It all arises from the frugal use of time; and by the thought that when once passed it can never be recalled. *Pereunt et imputantur*—“The hours perish and are laid to our charge”—as is written on the dial of All Souls, Oxford—a solemn and striking admonition to all men. My method was, to accomplish everything during the hours of business, and allow no arrears to accumulate. I never carried any subject of anxiety, or undone work, home with me. I cleared everything off as it arose. My shorthand writers enabled me to do that. I was thus ready every morning for the first new thing that offered.

When the day's work was over, I went home with a mind comparatively free, and then I was able to sit down in my study with the satisfaction of duty done, ready to take a part in filling up some unoccupied niche in the literature of my country. And if any one devotes an hour a day, or even half-an-hour to this purpose, it is astonishing what a great amount of literary work may be accomplished in the course of a few years. As most of the work that I have done has been done by snatches, and at odd moments, sometimes with long intervals of rest

between them, I trust that this circumstance will be taken into account by those who criticise my intermittent performances.

My friend Mr Wills, then editor of *All the Year Round*, was one of those who wondered at the various kinds of work which I got through. He sent me the following letter on the subject :—

“26 WELLINGTON STREET, STRAND,
“10th November 1863.

“MY DEAR SMILES,—

“I am ashamed to have delayed thanking you for your very acceptable present until now. I know that the plea of ‘want of time’ made to you would not be admitted, for you seem to create time—to have twenty-eight or thirty hours in each of your days; less favoured mortals having only twenty-four. To be able to manage the secretariat of a great railway, and to write books too, can only be accounted for on this theory.—Ever faithfully yours,

“W. H. WILLS.”

My friend Wills did not know the exact truth. The fact is, I was engaged in burning the candle at both ends! I was trying to do too much. I remember an anecdote of George Stephenson, who certainly did not stint himself in work; but he saw in others the evils of which he was not conscious in himself. To a young friend he said, “You are overdoing things. The brain can only stand a certain amount of work. If you try to do too much, nature will beat you. There are only sixteen ounces to be got out of the pound: remember that!”

The advice was no doubt very true, but sanguine people overlook caution and prudence. When I got home at night, I took a good cup of tea to freshen me up. Then I sat down and used my brain for three or four hours. I sometimes worked until a late hour.

My brain became excited, and then I could not sleep. But as I must have a night's rest with a view to the labours of the following day, I began the practice of taking sedatives. I knew it was wrong; and yet I did it. I was trying to get eighteen ounces out of the pound; and I found that it would not do. I might have known it beforehand; for I had written and thought much about health and its normal conditions. The result was that I got hipped, ill, and miserable. The result of taking hyoscyamus to provoke sleep is frightful. It gives one the most depressing views of life; as, in fact, is the case with most sedatives. But I think hyoscyamus is the worst of all in that respect.

Then I was worried; and worry is more hurtful than work. I need not say how it was: but I was not disposed to remain in the position that I then occupied. I had no desire to rely upon literature. I looked upon that as a staff, not as a crutch. Indeed, I had offers which I might have accepted had I wished to confine myself to the pen only. But I did not. Another opportunity offered. Mr Gilpin, M.P., a director of the South-Eastern Company, was also a director of an assurance company, and he communicated to me the offer of a position in the latter company at the same salary as I was then receiving. I consulted my friend Mr Eborall, and he advised me to accept the offer. Hence, on the 30th August 1866, I ceased to be a railway secretary, after twenty-one years' connection with railways.

I parted with my old company on the best of terms. The directors were generous to me on leaving. They conveyed to me, in a Board minute, their cordial thanks for my services, made me a handsome present, including a service of plate, and a pass over

the company's lines as long as I lived. The office-staff of the company also made me a present of plate in addition to that given by the directors. Both of these were presented to me with complimentary speeches at the handsome dinner given on the occasion of my final departure.