

MISCELLANEOUS POEMS;

AND

Pen-and-Ink Sketches.

CHIEFLY OF

WELSH SCENERY AND NOTED PLACES IN
CARNARVONSHIRE.

ALSO,

SELECTIONS FROM THE LETTERS OF "WELSH
GIRL," AND "OLD MOUNTAINEER."

BY

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"He roved among the hills and streams,
In the green wood and hollow dell,
They were his dwellings night and day."

—WORDSWORTH.

BANGOR:

JOHN KENMUIR DOUGLAS, HIGH STREET.

1868.

PENRHYN SLATE QUARRIES.

So much has been written about these extraordinary works, that every guide book and every little history of North Wales seems to have exhausted the subject; whilst every print-shop in town and country abounds with photographic representations of their gigantic excavations and wonderful galleries, filled with busy workmen, and the romantic "Pillar" in the centre of the quarry. But it is not proposed in this sketch to enter upon details so well known to most people; but it may be stated, in a general way, that it is upwards of one hundred years since the Penrhyn Slate Quarry was commenced. The works were at first opened

upon a very small scale; but as the superiority of slate over every other covering for roofing houses became known, the great value of that found in this quarry was rapidly recognized and appreciated. The keen-sighted enterprise of the first Lord Penrhyn was quickly alive to this fact, and he laid the foundation of that success which, from his day to the present time, has increased, from year to year.

As may be naturally supposed, the means employed at that early period were rude and unscientific; and much was then done which subsequently it has been found necessary and advisable to alter, and at the cost of enormous sums of money. Never contemplating the vast extent of ground it would be necessary to open to "win" the slate, the rubbish accruing from the operations had incautiously been placed, from time to time, upon the slate veins themselves; and to remove this waste to a convenient distance was the chief cause of the expense before the works could be laid out in the systematic form in which they are at present.

After the decease of the first Lord Penrhyn, a splendid monument to whose memory in Llandegai church has been placed, and has been the admiration of every visitor to the district, and the boast of every resident, the Penrhyn estates, and this wonderful slate mountain as a portion of them, fell to the possession of a gentleman of equally enlarged views as those of their previous noble owner; and it is to the late George Hay Dawkins Pennant, Esquire, that the works owe the origin of the clever arrangements above alluded to, and by which they were adapted for the employment of 3,000 workmen, and rendered capable of yielding enormous wealth.

Much of the details of this plan has devolved upon W. Francis, Esq., who during upwards of forty years has employed his untiring energy and skill in conducting these gigantic operations. He is even still in harness; but his labours during the last twelve or fifteen years have been lightened by his son, Mr. John Francis, being associated with himself as joint manager. Slate to the value of millions of pounds sterling had been during this time extracted from the mountain, and engineering skill was ever on the alert to provide for the altered conditions which such vast excavations entailed, and to secure the manufacture of slate equal to the almost daily increasing demand.

About the time that Stephenson's mighty tubular bridge was being thrown over the Menai Straits, it became apparent that this could only be accomplished by working the slate veins at a lower level, for up to that time the mountain had only been wrought from its base to about six hundred feet towards its summit. In fact, the conception was to create as large a quarry, *underground*, as that which presented itself to the eye on entering the quarry. Great as Mr. Francis's experience had been, he did not feel himself justified in undertaking these new works—in themselves at once bold in conception, and definite in purpose, without first consulting other engineers, and he judiciously called to his assistance Robert Stephenson, Esq., and his talented staff, then employed on the Britannia Bridge. With these renowned geniuses of the age in consultation, Mr. Francis's plans were matured, and with the concurrence of the present noble owner, it was determined to adopt them.

We disclaimed at the commencement of this sketch all intentions to repeat the descriptions of Penrhyn Quarry already extant; our purpose being to *add* those particulars which have never been published, and which as they relate to extensive works carried on underground, are but very little known to the outside public.

It was obvious that the contemplated mighty works in excavating below the level base of the mountain, would require water-ways to carry off the accumulated natural drainage. Mr. Francis's plans embraced a very lengthy tunnel, not only for this purpose, but also for discharging the spent water from the engine machinery he proposed erecting to lift the produce from the lower levels to the surface of the quarry. The construction of this machinery was to be from designs supplied by Frank Foster, Esq., civil engineer which, though stupendous in character, presented no difficulty in the way of execution. Our large manufacturing firms can speedily supply everything that the foundry, the forge, and the lathe can produce, to assist us in our mechanical enterprises.

With the long tunnel commenced the "tug of war." For it, contract after contract was let, and one after another was thrown up. Difficulties that had never been dreamed of, presented themselves, and many thousands of pounds were lost in vain efforts to conquer nature. The reader

may wonder how in this tunnel-making age it should occur that engineers and contractors should alike have been baffled. But so it was; nor in the hundreds of miles of tunnels that have been made in every country of the world has a parallel case been found. This tunnel, in its course to the quarry, had to pass *under a lake*, or what had been a lake, but which was now filled with millions of tons of slate waste, there deposited from the quarry. The bottom of this original lake was a soft, blue clay—in fact, incipient slate. As soon as the excavations of the miners approached this unctuous matter, it oozed into the works by the enormous pressure from above. Every possible device was tried to keep it back, even to the construction of a series of ponderous iron tubes, the size of the tunnel. These it was found impossible to fix and unite, as, through a single rivet-hole, the pressure of the blue clay would cause as much to pass during a night as would require days again to clear and remove. Human life, too, was in imminent danger; and, as already stated, every fresh contractor was thwarted like his predecessor. Mr. Francis's plans were thus brought to a standstill in the most unexpected manner.

In dilemmas like these it often happens that an original genius steps in, and nothing daunted, boldly undertakes that wherein men of previous note have failed. Mr. J. Francis slightly deviated from Mr. Forster's plans, and was fortunate in finding a contractor of the character indicated above, in the person of Mr. George Twigge. In his early years, this gentleman had gained experience in some of the most difficult mining operations; and underground works had been carried out by himself in an original and satisfactory manner. After the most laborious and dangerous toil of the workmen, and intense application by himself, Mr. Twigge's efforts were at length crowned with success by tunnelling through this blue clay, and arching with strong iron for upwards of seventy-five yards; and so he managed to carry the tunnel into the quarry, after everyone else had failed to prosecute it a short distance. The drainage being now accomplished, the other portions of the plans had to be proceeded with. These embraced opening into the sub-strata of the slate rock, and formed, by a series of larger tunnels, underground passages to answer the purposes of the "galleries" (so long admired on the out-

side of the Quarry) for taking the produce to the spots below, where the "water lifts" were fixed for conveying it to the surface. These tunnels were required to be capacious enough for drains, and for the tallest man to walk upright, and through which to lay a double line of railway.

As Mr. Twigge had been so successful in cutting the tunnel for carrying the water away, all the remaining tunnels were "let" to him, and with similar results, he having constructed miles of tunnelling through the hardest igneous rocks in the kingdom, and also the whole of the solid slate rock below the apparent Penrhyn Quarry. We would strongly recommend the reader, if he possess a good nerve and can obtain permission, to get an underground view of these magnificent works, which in a very few years will extend the Quarry by depth, to double its present size; and as slate from depth is so much more productive than from surface workings, the large revenues of the noble owner will in like proportion be increased.

By these underground workings at Penrhyn Quarry, the sealed book of Nature, as it regards slate, has been opened. Mr. Twigge and his miners have cut through the veins of the celebrated Bangor slate range in all directions; and the value of every one of these veins is now known as they were never known by any previous surface working. By this also the great value of the Penrhyn Quarry is established for ages to come. Whatever may be worked to its breadth, on the surface, can never be exhausted in the depth; and should the projection we have heard spoken of, as that of Mr. E. J. J. Dixon, of Bangor, for constructing a tunnel in a lower level into the Penrhyn Quarry, ever be carried out, the drainage would be effected at a very much lower level, and a line of railway through the same would deposit the produce upon the quay at the Port; whilst it seems to us the quay would be worked cheaper, and that the profits would be proportionately greater.