

His account charmed the duke, who drew the unconscious genius from obscurity, and provided him with an employment which left him plenty of time for the cultivation of the sciences. He discovered in him the same genius for music, for painting, for architecture, and for all the sciences which depend on calculations and proportions.

Such is the history of the youth of Edmund Stone, the well known mathematician. He lived to an advanced age, preserving an unblemished reputation and rendering important services to science. Among the works which he left behind him are a "Mathematical Dictionary," a "Treatise on Fluxions," another on Euclid, and another on the use of mathematical instruments. He died in 1708.

At the beginning of the eighteenth century there was to be seen, wandering in the fields in attendance upon a few sheep, or perhaps upon an ox tethered to him by a rope, a ragged, shock-haired child of ten years of age, the son of a poor peasant couple, of whose parental care had been deprived by death. The little lone orphan was sent into the fields to earn his daily bread by leading the cattle to pasture and keeping the flocks within bounds in a district where there were, and are to this day, no fences. With no fond parents to caress, no companions to play with him, it may be imagined that the life of the little outcast was sufficiently dreary and melancholy; but he found a compensation for his loneliness in attempts to gratify his thirst for knowledge—a passion which took possession of his mind in his very earliest childhood. With knowledge he must be fed, knowledge of some sort or other, and having no opportunity of exercising a choice, he was obliged to content himself with such means as came in his way. He had no books, and they would have been no use to him if he had had them, seeing that he knew not a single letter of the alphabet, and not a friend to teach him. The first thing we find him doing is making a collection of snakes, frogs, toads, and such reptiles and small animals as he could succeed in capturing, and studying their structure and habits, and asking every body who came in his way for information concerning them. It was but little information, however, that he derived from them—for the inhabitants of the district were profoundly ignorant, and quite as likely to mislead as to instruct him.

In this way the young Du Val spent his boyhood—groping in the dark, as it were, for food to satisfy his hungry intellect. At length he happened to catch sight of a book in the hands of a peasant boy, who had learned to read. The volume was *Æsop's Fables*, with rude pictorial illustrations. He had long been craving in secret for the ability to read; and the sight of this volume aroused in him a determination not to be balked. He earnestly besought the owner of the book to teach him his letters; but the boy was rarely in the humour to comply with his request. The only way to ensure his compliance was to bribe him; and this Du Val did with every miserable coin that he could scrape together by any species of labour or sacrifice. It was only by long and weary struggles against incredible difficulties that he succeeded at length so far as to be able with immense labour to spell out a page or two of the book. Having advanced so far, he became accidentally possessed of one of the country almanacs, of which enormous numbers were annually hawked through the French provinces. Here his attention was caught by the twelve signs of the zodiac, which he expected to find delineated in the heavens, and constantly watched for them there—it need not be said, in vain. His observations were not however fruitless; and after a time he began to realize some of the facts of astronomy, and to reason upon them with remarkable sagacity. Having occasion to go to Nancy, he saw in a print-seller's shop-window a map of the world. This he purchased for a trifle, and it became to him a new source of wonder and speculation. He pored over it incessantly, devoting to it all his hours of leisure. He had everything to discover for himself, and was so unacquainted with the science of geography as at first to mistake the degrees on the equator for French leagues; but by application and perseverance he corrected his first blunders, and came to a competent understanding of the map and its practical usefulness.

Du Val's fondness for study, and for retirement that he might study uninterruptedly, gave him a distaste for the society of the boisterous peasant lads of his native village. To be freed from their intrusions and interruptions, he applied to a company of hermits, living together in the recesses of a wood, at some distance from Nancy, and engaged himself with them to feed and tend a few cows which they kept, and perform other menial services. The hermits, like most of the ascetics of that particular era, were grossly ignorant of scientific matters, and quite unqualified to direct the studies of their herdsman. They had however, in the cells a tolerable collection of books among them, and to these Du Val had access, and now for the first time felt himself in his element, and to make important progress in the acquisition of knowledge. Happily, many persons of education came to visit the hermits, and to them he invariably applied for the solution of any difficulty he met with in his reading, and derived most valuable assistance in this way. Every farthing of money that he earned in this hard service he laid out in maps and books, and studied them with all the ardour of his mind night and day—caring nothing for his personal appearance, which was wild and savage as an Orson of the woods.

Du Val remained in the service of the hermits and their cows, discharging his duty with rigid fidelity, and as rigidly subjecting the passions and pleasures of youth, to the cravings of his mind for knowledge, up to his twenty-first year. As it was with Edmund Stone, so it happened with Du Val; accident, or what seemed accident, rescued him from obscurity and difficulty, and placed him in a position of comfort and honour.

In the autumn of 1717, the young Prince of Lorraine happened to be hunting in the forest where the hermits had their residence. The tutor and governor of the young prince, Baron Psutschner, having strayed from the hunt, came unexpectedly upon the young Du Val sitting quietly under a tree, surrounded with his maps and books spread out upon the grass, while the hermits' cows tranquilly chewed the cud in a dell below. The spectacle of a herdsman, with a face tanned to the colour of bark, and shaded only by a long thatch of flaxen hair, his sole garb a tattered garment of coarse linen, and with a heap of maps and books about him, seemed to the baron so strange a sight, that he rode off at once to bring the prince to witness it. The prince rode up immediately, and put many questions to Du Val concerning his way of life and the progress he had made in learning. The answers of the herdsman shewed the prince that he had already mastered the elements of several sciences. The prince proposed that he should enter his service, and offered to take him to court. Du Val had read in the hermit's books that the atmosphere of a court was unfavourable to study and inimical to virtue; and he answered with the utmost simplicity, 'that he should prefer to tend upon his cows and lead a tranquil life in the forest, with which he was perfectly satisfied, rather than give up his studies to wait on the prince; but that if his highness would introduce him to the society of books instead of courtiers, and give him an opportunity of acquiring more learning and knowledge he was quite ready to follow him at once.' The prince was much pleased with his answer, and interceding with his father on behalf of the herdsman, prevailed on the duke to send him to the college at Pont-au-Mausson. All Du Val's oppositions were immediately at an end. His course at college was triumphant. He made the tour of France for further improvement, at the charge of the duke, and gained a professorship in the Academy of Luneville, with a liberal salary. Subsequently he won still greater honors and rewards, and lived to enjoy them to the age of fourscore years. Through life he maintained his modesty and simplicity of demeanour, and delighted to recur to the particulars of his youthful course. He died in 1775.

In the year 1699, the son of a carpenter, named Harrison, of Foulby, in Yorkshire, lay ill in bed, unable to move about. He was a child of six years of age; and among the indulgences that were offered him to while away the tedium of sickness, he chose to have the works of a watch laid open upon his pillow that he might mark its movements. As he grew up he received very little education, and was put to learn his father's trade, working with him in the carpenter's shop and at the houses of his patrons. As he had no time for study by day, he made time by sitting up at night, and was in the habit of writing out in full whatever he wished to learn thoroughly. Clocks, watches, and wheel machinery of all kinds had more charms for him than anything else; and to the construction and improvement of these he directed all his energies and experiments. With this view he pursued the study of arithmetic in its higher branches, and became a good practical mathematician. He invariably embodied any new idea that struck him in a new time piece; and by a series of trials in this way attained to a sounder knowledge of his subject than was possessed by any professed horologist of his time.

In the reign of Queen Anne, a reward was offered by the Government for the discovery of a successful mode of ascertaining the longitude at sea. Harrison's attention was drawn to the subject, and he had the ambition to compete for the twenty thousand pounds which was to reward the difficult achievement. He first produced a clock whose movements he expected would be proof against the irregularities of climate and the motion of a vessel. An experiment made with it during foul weather on the River Humber, shewed that he had calculated rightly; and he brought the clock to London, and submitted it to the members of the Royal Society. They gave him a certificate to the effect that his machine promised to perform with the necessary exactness. In consequence of this, a trial was made on board a man-of-war bound for Lisbon, and succeeded so well, that the Board of Longitude awarded Harrison £500, and encouraged him to proceed. How he did proceed—how he abandoned the clock form, and made his chronometers in the shape of large watches—how he finally conquered all difficulties, fairly fulfilled the conditions required, and received the £20,000, and enjoyed the fame to his genius and perseverance—most people know, and those who do not can easily learn from the pages of the *Biographical Dictionary*.

William Gifford was the son of a dissipated and abandoned man, who had no care for his offspring, and who closed a vagabond life by a premature death. His widow soon followed him to the grave, and at twelve years of age young Gifford was left alone in the world. During his parents' life he had known poverty and wretchedness in