Franklin long maintained himself by his trade of printing. He was a hard-working man—thrifty, frugal, and a great saver of time. He worked for character as much as for wages; and when it was found that he could be relied on, he prospered. At length he was publicly recognized as a great statesman, and as one of the most scientific men of his time.

Ferguson, the astronomer, lived by portrait-painting, until his merits as a scientific man were recognized. John Dolland maintained himself as a silk-weaver in Spitalfields. In the course of his studies he made great improvements in the refracting telescope; and the achromatic telescope, which he invented, gave him a high rank among the philosophers of his age. But during the greater part of his life, while he was carrying on his investigations, he continued, until the age of forty-six, to carry on his original trade. At length he confined himself entirely to making telescopes, and then he gave up his trade of a silk-weaver.

Winckelman, the distinguished writer on classical antiquities and the fine arts, was the son of a shoemaker. His father endeavored, as long as he could, to give his boy a learned education; but, becoming ill and worn out, he had eventually to retire to the hospital. Winckelman and his father were once accustomed to sing at night in the streets to raise fees to enable the boy to attend the grammar school. The younger Winckelman then undertook, by hard labor, to support his father; and afterwards, by means of teaching, to keep himself at college. Every one knows how distinguished he eventually became.

Samuel Richardson, while writing his novels, stuck to his trade of a bookseller. He sold his books in the front shop, while he wrote them in the back. He would not give himself up to authorship, because he

loved his independence. "You know," he said to his friend Defreval, "how my business engages me. You know by what snatches of time I write, that I may not neglect that, and that I may preserve that independency which is the comfort of my life. I never sought out of myself for patrons. My own industry and God's providence have been my whole reliance. The great are not great to me unless they are good. And it is a glorious privilege that a middling man enjoys, who has preserved his independency, and can occasionally (though not stoically) tell the world what he thinks of that world, in hopes to contribute, though by his mite, to mend it."

The late Dr. Olinthus Gregory, in addressing the Deptford Mechanics' Institution at their first anniversary, took the opportunity of mentioning various men in humble circumstances (some of whom he had been able to assist), who, by means of energy, application, and self-denial, had been able to accomplish great things in the acquisition of knowledge. Thus he described the case of a laborer on the turnpike-road, who had become an able Greek scholar; of a fifer and a private soldier in a regiment of militia, both self-taught mathematicians, one of whom became a successful school-master, the other a lecturer on natural philosophy; of a journeyman tin-plate worker, who invented rules for the solution of cubic equations; of a country sexton, who became a teacher of music, and who, by his love of the study of musical science, was transformed from a drunken sot to an exemplary husband and father; of a coal-miner (a correspondent of Dr. Gregory's), who was an able writer on topics of the higher mathematics; of another correspondent, a laboring white-smith, who was also well acquainted with the course of pure mathematics, as taught at Cambridge, Dublin, and the

military colleges; of a tailor, who was an excellent geometrician, and had discovered curves which escaped the notice of Newton, and who labored industriously and contentedly at his trade until sixty years of age, when, by the recommendation of his scientific friends, he was appointed nautical examiner at the Trinity House; of a plowman in Lincolnshire, who, without aid of men or books, discovered the rotation of the earth, the principles of spherical astronomy, and invented a planetary system akin to the Tychonic; of a country shoe-maker, who became distinguished as one of the ablest metaphysical writers in Britain, and who, at more than fifty years of age, was removed, by the influence of his talents and his worth, from his native county to London, where he was employed to edit some useful publications devoted to the diffusion of knowledge and the best interests of mankind.

Students of art have had to practice self-denial in many ways. Quentin Matsys, having fallen in love with a painter's daughter, determined to win her. Though but a blacksmith and a farrier, he studied art so diligently, and acquired so much distinction, that his mistress afterward accepted the painter whom she had before rejected as the blacksmith. Flaxman, however, married his wife before he had acquired any distinction whatever as an artist. He was merely a skillful and promising pupil. When Sir Joshua Reynolds heard of his marriage, he exclaimed, "Flaxman is ruined for an artist!" But it was not so. When Flaxman's wife heard of the remark, she said, "Let us work and economize. I will never have it said that Ann Denham ruined John Flaxman as an artist." They economized accordingly. To earn money, Flaxman undertook to collect the local rates; and what with art and industry, the patient, hard-working, thrifty

couple, after five years of careful saving, set out for Rome together. There Flaxman studied and worked; there he improved his knowledge of art; and there he acquired the reputation of being the first of English sculptors.

The greater number of artists have sprung from humble life. If they had been born rich, they would probably never have been artists. They have had to work their way from one position to another; and to strengthen their nature by conquering difficulty. Hogarth began his career by engraving shop-bills. William Sharp began by engraving door-plates. Tassie, the sculptor and medalist, began life as a stone-cutter. Having accidentally seen a collection of pictures, he aspired to become an artist, and entered an academy to learn the elements of drawing. He continued to work at his old trade until he was able to maintain himself by his new one. He used his labor as the means of cultivating his skill in his more refined and elevated profession.

Chantrey, of Sheffield, was an economist both of time and money. He saved fifty pounds out of his earnings as a carver and gilder, paid the money to his master, and canceled his indentures. Then he came up to London, and found employment as a journeyman carver; he proceeded to paint portraits and model busts, and at length worked his way to the first position as a sculptor.

Canova was a stone-cutter, like his father and his grandfather; and through stone-cutting he worked his way to sculpture. After leaving the quarry, he went to Venice, and gave his services to an artist, from whom he received but little recompense for his work. "I labored," said he, "for a mere pittance, but it was sufficient. It was the fruit of my own resolution, and, as

I then flattered myself, the foretaste of more honorable rewards; for I never thought of wealth." He pursued his studies—in drawing and modeling: in languages, poetry, history, antiquity, and the Greek and Roman classics. A long time elapsed before his talents were recognized, and then he suddenly became famous.

Lough the English sculptor, is another instance of self-denial and hard work. When a boy, he was fond of drawing. At school he made drawings of horses, dogs, cows, and men, for pins: that was his first pay, and he used to go home with his jacket sleeve stuck full of them. He and his brother next made figures in clay. Pope's Homer lay on his father's window. The boys were so delighted with it that they made thousands of models—one taking the Greeks, and the other the Trojans. An odd volume of Gibbon gave an account of the Coliseum. After the family were in bed the brothers made a model of the Coliseum, and filled it with fighting gladiators. As the boys grew up they were sent to their usual outdoor work, following the plow, and doing the usual agricultural labor; but still adhering to their modeling at leisure hours. At Christmas-time Lough was very much in demand. Every body wanted him to make models in pastry for Christmas pies—the neighboring farmers especially. "It was capital practice," he afterward said.

At length Lough went from Newcastle to London, to push his way into the world of art. He obtained a passage in a collier, the skipper of which he knew. When he reached London, he slept on board the collier as long as it remained in the Thames. He was so great a favorite with the men, that they all urged him to go back. He had no friends, no patronage, no money! What could he do with everything against him? But, having already gone so far, he determined to proceed. He would not go back—at least, not yet. The men all wept when he took farewell of them. He was alone in London, alone under the shadow of St. Paul's.

His next step was to take a lodging in an obscure first floor in Burleigh Street, over a green-grocer's shop; and there he began to model his grand statue of "Milo." He had to take the roof off to let Milo's head out. There Haydon found him and was delighted with his genius. "I went," he says, "to young Lough, the sculptor, who has just burst out, and has produced a great effect. His "Milo" is really the most extraordinary thing, considering all the circumstances, in modern sculpture. It is another proof of the efficacy of inherent genius." That Lough must have been poor enough at this time, is evident from the fact that, during the execution of his "Milo," he did not eat meat for three months; and when Peter Coxe found him out he was tearing up his shirt to make wet rags for his figure, to keep the clay moist. He had a bushel and a half of coals during the whole winter; and he used to lie down by the side of his clay model of the immortal figure, damp as it was, and shiver for hours till he fell asleep.

Chantrey once said to Haydon, "When I have made money enough, I will devote myself to high art." But busts engrossed Chantrey's time. He was munificently paid for them, and never raised himself above the money-making part of his profession. When Haydon next saw Chantrey at Brighton, he said to him, "Here is a young man from the country, who has come to London; and he is doing precisely what you have so long been dreaming of doing."

The exhibition of "Milo" was a great success. The Duke of Wellington went to see it, and ordered a statue. Sir Matthew White Ridley was much struck

by the genius of young Lough, and became one of his greatest patrons. The sculptor determined to strike out a new path for himself. He thought the Greeks had exhausted the Pantheistic, and that heathen gods had been overdone. Lough began and pursued the study of lyric sculpture: he would illustrate the great English poets. But there was the obvious difficulty of telling the story of a figure by a single attitude. It was like a flash of thought. "The true artist," he said, "must plant his feet firmly on the earth, and sweep the heavens with his pencil. I mean," he added, "that the soul must be combined with the body, the ideal with the real, the heavens with the earth."

It is not necessary to describe the success of Mr. Lough as a sculptor. His statue of "The Mourners" is known all over the world. He has illustrated Shakspeare and Milton. His "Puck," "Titania," and other great works, are extensively known, and their genius universally admired. But it may be mentioned that his noble statue of "Milo" was not cast in bronze until 1862, when it was exhibited at the International Exhibition of that year.

The Earl of Derby, in recently distributing the prizes to the successful pupils of the Liverpool College, made the following observations:

"The vast majority of men, in all ages and countries, must work before they can eat. Even those who are not under the necessity, are, in England, generally impelled by example, by custom, perhaps by a sense of what is fitted for them, to adopt what is called an active pursuit of some sort. . . . . If there is one thing more certain than another, it is this—that every member of a community is bound to do something for that community, in return for what he gets from it; and neither intellectual cultivation, nor the possession of

material wealth, nor any other plea whatever, except that of physical or mental incapacity, can excuse any of us from that plain and personal duty. . . . . And though it may be, in a community like this, considered by some to be a heterodox view, I will say that it often appears to me, in the present day, that we are a little too apt, in all classes, to look upon ourselves as more machines for what is called 'getting-on,' and to forget that there are in every human being many faculties which can not be employed, and many wants which can not be satisfied, by that occupation. I have not a word to utter against strenuous devotion to business while you are at it. But one of the wisest and most thoroughly cultivated men whom I ever knew retired before the age of fifty from a profession in which he was making an enormous income, because, he said, he had got as much as he or any one belonging to him could want, and he did not see why he should sacrifice the rest of his life to money-getting. Some people thought him very foolish. I did not. And I believe that the gentleman of whom I speak never once repented his decision."

The gentleman to whom Lord Derby referred was Mr. Nasmyth, the inventor of the steam-hammer. And as he has himself permitted the story of his life to be published, there is no necessity for concealing his name. His life is, besides, calculated to furnish one of the best illustrations of our subject, When a boy, he was of a bright, active, cheerful disposition. To a certain extent he inherited his mechanical powers from his father, who, besides being an excellent painter, was a thorough mechanic. It was in his workshop that the boy made his first acquaintance with tools. He also had for his companion the son of an iron-founder, and he often went to the founder's shop to watch the mold-

ing, iron-melting, casting, forging, pattern-making, and smith's work that were going on.

"I look back," Mr. Nasmyth says, "to the hours of Saturday afternoons spent in having the run of the workshops of this small foundry as the true and only apprenticeship of my life. I did not trust to reading about such things. I saw, handled, and helped when I could; and all the ideas in connection with them became in all details, ever after, permanent in my mind—to say nothing of the no small acquaintance obtained at the same time of the nature of workmen."

In course of time, young Nasmyth, with the aid of his father's tools, could do little jobs for himself. He made steels for tinder-boxes, which he sold to his school-fellows. He made model steam-engines, and sectional models, for use at popular lectures and in school, and, by selling such models, he raised sufficient money to enable him to attend the lectures on natural philosophy and chemistry at the Edinburgh University. Among his works at that time was a working model of a steam-carriage for use on common roads. It worked so well that he was induced to make another on a larger scale. After having been successfully used, he sold the engine for the purpose of driving a small factory.

Nasmyth was now twenty years old, and wished to turn his practical faculties to account. His object was to find employment in one of the great engineering establishments of the day. The first, in his opinion, was that of Henry Maudsley, of London. To attain his object, he made a small steam-engine, every part of which was his own handiwork, including the casting and forging. He proceeded to London; introduced himself to the great engineer; submitted his drawings;

showed his models; and was finally engaged as Mr. Maudsley's private workman.

Then came the question of wages. When Nasmyth finally left home to begin the world on his own account, he determined *not to cost his father another farthing.* Being the youngest of eleven children, he thought that he could maintain himself, without trenching further upon the family means. And he nobly fulfilled his determination. He felt that the wages sufficient to maintain other workmen would surely be sufficient to maintain him. He might have to exercise self-control and self-denial; but of course he could do that. Though but a youth, he had wisdom enough, and self-respect enough, to deny himself every thing that was unnecessary in order to preserve the valuable situation which he had obtained.

Well, about the wages. When Mr. Maudsley referred his young workman to the chief cashier as to his weekly wages, it was arranged that Nasmyth was to receive ten shillings a week. He knew that, by strict economy, he could live within this amount. He contrived a small cooking apparatus, of which we possess the drawings. It is not necessary to describe his method of cooking, nor his method of living; it is sufficient to say that his little cooking apparatus (in which he still takes great pride) enabled him fully to accomplish his purpose. He lived within his means, and did not cost his father another farthing.

Next year his wages were increased to fifteen shillings. He then began to save money. He did not put it in the bank, but used his savings for the purpose of making the tools with which he afterwards commenced business. In the third year of his service his wages were again increased, on account, doubtless, of the value of his services, "I don't know," he has since

said, "that any future period of my life abounded in such high enjoyment of existence as the three years I spent at Maudsley's. It was a glorious situation for one like myself—so earnest as I was in all that related to mechanism, in the study of men as well as of machinery. I wish many a young man would do as I then did. I am sure they would find their reward in that feeling of constant improvement, of daily advancement, and true independence, which will ever have a charm for those who are earnest in their endeavors to make right progress in life and in the regard of all good men."

After three years spent at Maudsley's, Mr. Nasmyth returned to Edinburgh to construct a small stock of engineering tools suitable for starting him in business, on his own account. He hired a workshop, and did various engineering jobs, in order to increase his little store of money and to execute his little stock of tools. This occupied him for two years; and in 1834 he removed the whole of his tools and machinery to Manchester. He began business there in a very humble way, but it increased so rapidly that he was induced to remove to a choice piece of land on the banks of the Bridgewater canal at Patricroft, and there make a beginning—at first in wooden sheds—of the now famous Bridgewater Foundry.

"There," says he, "I toiled right heartily until December 31st, 1856, when I retired to enjoy, in *active* leisure, the result of many an anxious and interesting day. I had there, with the blessing of God, devoted the best years of my life to the pursuit of a business of which I was proud. And I trust that, without undue vanity, I may be allowed to say that I have left my mark upon several useful inventions, which probably have had no small share in the mechanical works of the

age. There is scarcely a steamship or locomotive that is not indebted to my steam-hammer, and without it, Armstrong and Whitworth guns and iron-plated men-of-war could scarcely have existed."

But though Nasmyth retired from business at the age of forty-eight, he did not seek repose in idleness. He continues to be as busy as the busiest, but in an altogether different direction. Instead of being tied to the earth, he enjoys himself among the stars. By means of telescopes of his own making, he has investigated the sun, and discovered its "willow leaves;" he has examined and photographed the moon, and in the monograph of it which he has published, he has made us fully acquainted with its geography. He is also a thorough artist, and spends a considerable portion of his time in painting, though he is too modest to exhibit. The last time we visited his beautiful home at Hammerfield, he was busy polishing glasses for one of his new telescopes, the motive power being a windmill erected on one of his outhouses.

Another word before we have done. "If," said Nasmyth, "I were to try to compress into one sentence the whole of the experience I have had during an active and successful life, and offer it to young men as a rule and certain receipt for success in any station, it would be comprised in these words: 'Duty *first!* Pleasure *second!*' From what I have seen of young men and their after-progress, I am satisfied that what is generally termed 'bad-fortune,' 'ill-luck,' and 'misfortune,' is, in nine cases out of ten, simply the result of *inverting* the above simple maxim. Such experience as I have had convinces me that absence success arises, in the great majority of cases, from want of self-denial and want of common sense. The worst of all maxims is, "Pleasure *first!* Work and Duty *second!*'"