CHAPTER IV.

THE STUDENT.

We shall go forth together. There will come
Alike the day of trial unto all,
And the rude world will buffet us alike.
But when the silence and the calm come on,
And the high seal of character is set,
We shall not all be similar. . . . . .
For in the temper of the invisible mind,
The god-like and undying intellect,
There are distinctions that will live in heaven,
When Time is a forgotten circumstance!

N. P. Willis.

The happy days at Inchbonny could not last for ever. In 1793, at the early age of twelve, David Brewster went to the University of Edinburgh, and from that time the visits to Inchbonny became the favourite holiday pleasure, instead of the daily occupation. In those days long journeys on foot were undertaken with an alacrity of which little is known in our times of cheap and easy transit, and students greatly preferred their own instruments of locomotion to the Jedburgh "fly," which took a whole day to lumber along between the Scotch metropolis and the border county-town. David used to allude to the walks from Edinburgh to Jedburgh as very pleasant tasks. After his forty-five miles' walk home, he generally started again for Inchbonny the same day, so eager was he to hear what his friend had been doing, and to recount his own advances in know-

ledge. The separation was further soothed by a constant correspondence. Unfortunately the earlier letters have not been preserved, but those that remain show it to have been a remarkable one, and Brewster's handwriting is precisely the same as that of his later years. They contain astronomical calculations, abstracts of abstruse mathematical and scientific works, notices of the ardent commencement of his life-long study of optics, as well as of the favourite amusement of making and testing telescopes and other philosophical instruments. There is also frequent mention of the eminent men with whom he was associated, at first in the relation of student and professor, but marvellously soon in that of friend and companion,—Professor Playfair, Professor Robison, Dugald Stewart, and others. Everything, in short, is touched upon that could interest Veitch and instruct himself; while the answers he received were well calculated to keep alive and nourish the desire for scientific and practical knowledge which had commenced so early. These extracts give an idea of his experiments and occupations. They are taken from the lighter letters of a series of seventy-two, many of them abstrusely scientific:—

"EDINR., *November* 15, 1799.

"You may write me this week, and give me any directions which you think necessary for constructing the electrical machine. Would the hair of one's head answer as well for the cushion as horse-hair, as it could be easily got? You will recollect that I once told you that Mr. Edwards used no more than two tools, viz., a Penton-block and a bed of hones. . . . The following composition for reflecting specula, viz., copper 32 ounces, tin 13 ounces, and regulus of antimony $\frac{1}{40}$ of the whole,

viz., one ounce to 2½ pound of metal, Mr. Edwards says makes a beautiful metal, *very* like the silver composition, but not quite so white. This composition is infinitely cheaper than the silver one, and might be easily put in practice. . . ."

"EDINR., *Decr.* 6, 1799.

"I have finished the electrical machine, but I cannot make it give a shock. When I cover the rubber with silk, and darken the room, a faint light appears between the rubber and the glass, but when I take away the silk no light at all appears. Might we not infer from this that more electricity would be produced were the rubber to be covered with silk? In this situation it attracts small pieces of paper."

"EDINBURGH, *April* 4, 1800.

"I lately made a very large map of the stars that were near to this planet, which I would have sent you had it not been lost at the Observatory. The man in the Observatory has not yet learned by experience, as we have, what a difficult thing it is to give a speculum a good figure. He is working too for the telescope which I mentioned, but from his careless and unsteady manner, I can prophesy that none of them will show. He, however, thinks otherwise. . . . James Scott delivered his lecture in the Divinity Hall here on Wednesday last. The Professor found fault with it in every place, and gave it no praise at all. It was reckoned the poorest discourse that had been delivered here this winter. They even found great fault with his delivery, in which he so much prides himself. Sermons that please the old wives of Jedburgh do not answer when preached before judges."

"EDINBURGH, *October* 2, 1800.

"I arrived here yesterday at three in the afternoon,

and have been employed since that time in preparing my Newtonian telescope for seeing the eclipse. During the whole of this day the sky has been completely overcast; it has just this moment brightened up, and is entirely free of clouds, so that I expect still to see the eclipse, as it will happen in the space of three hours from this. My telescope is in a better state just now than I ever saw it; and, without the least exaggeration, shows as distinct as any of the kind I ever saw, though its magnifying power is 62, and though its aperture (which is not in the least degree confined) is about seven-tenths larger than the table prescribes, which you know makes a great deal of surface. The calculation of this eclipse, which I made from Ferguson, does not differ so much from the Nautical Almanac as one would have expected. . . . The penumbra has just this moment left the moon; the eclipse began at 45 minutes past eight, and ended 35 minutes past 10, mean time; consequently the duration has been 1 hour and 50 minutes, the very same as was found in the projection."

An amusing and exceedingly natural feeling of complacency regarding Inchbonny teaching creeps out occasionally, mingled with a little jealousy of superior materials, as in this postscript to the last letter:—

"*P.S.*—I called at the Observatory this evening a little before the eclipse happened, and saw the moon through the two feet and a half Newtonian reflector which the man has sold for ten guineas; it shows as ill when compared with mine (which is of the same focal length), or with any of yours, as a dirty common refrac-

tor does, when compared with a fine achromatic telescope; nay, to tell the truth, the moon appears far better without it. It is fitted up in a fine brass tube, and mounted on an excellent stand, whereas ours bear a greater resemblance to *coffins* or *waterspouts* than anything else. D. B."

In the following letter there is a touching tribute to his obligation to James Veitch :—

"EDINBURGH, 1801.

"I am sorry you should ever think of attributing my long silence to my 'not thinking it worth while to put off my time in writing to you.' Far be it from me to entertain such a slight opinion of any of my friends, but particularly of you, whom I have every reason in the world to remember as long as those studies can afford me any delight which you first encouraged me to pursue, and in the prosecution of which I have repeatedly received your assistance. However, if my memory does not fail me, I believe that I wrote you last, and that I have never received an answer. Have you heard of the Galvanic Column, which gives a shock in the same manner as the electrifying machine? It is made in the following manner:—Take any number of plates of copper (penny pieces answer very well), or, which is better, of silver (such as half-crowns or crowns), and an equal number of tin, or, which is much better, of zinc, and a like number of disks or pieces of card or leather, or cloth soaked well in water. Then build up a pile of these, viz., a piece of copper, a piece of tin, and a piece of wet card; then another piece of copper, a piece of tin, and a piece of wet card, and so on till you have a column as high as you please. If you use silver and

zinc instead of copper and tin, you must put the silver in the place of the copper, and the zinc in the place of the tin. The instrument being thus completed, you will receive a shock by wetting your hands and applying one of them to the lower plate and the other to the upper one, and that as often as you please to lift up your fingers and put them down. When the hands are not wet, the galvanic influence cannot pierce the dry skin; and in order to receive a smarter shock, it is proper to wet the hands and grasp with them two large pieces of metal, and then touch the upper and under plates of the column with these pieces of iron. Twenty pieces will give a shock in the arms if the above precautions be attended to, and one hundred may be felt to the shoulders. It is also very remarkable, that if you place a piece of zinc above your tongue, and a piece of silver below it, and then bring them in contact over the tip of your tongue, you will feel a curious acrid sort of taste, and if you let the zinc remain on your tongue, and place the silver on your eye so that it may touch the cornea, and then bring their extremities in contact, you will feel a curious taste in your tongue, and see a flash of fire dart from your eye.—I am, yours affectionately, DAVID BREWSTER."

In this correspondence there are many hints denoting the profession for which the young scholar was preparing with deep and reverent attention, even in the midst of the charms of science. Mr. Brewster was a strenuous supporter of the Established Church, and destined his four able sons to enter its pale as ministers. James, George, and Patrick each followed this path. The first reached the truest eminence which it admits

of. Although the minister of a quiet country parish, he was called by Dr. Chalmers "one of the four pillars of the Church of Scotland," from his holy life and wise judgment. Like Daniel, he was a man "greatly beloved," and was honoured of God in the conversion of many souls. As an author he was well known, and successful. He was the friend and father, as well as pastor, of the fishing population of Ferryden, a coast village in his parish; and many trace the good work which still goes on there to the example and prayers of their godly minister, who "though dead, yet speaketh."[1] Dr. Brewster was a Disruption minister, leaving without hesitation one of the loveliest churches and manses in Scotland. The second, Dr. George Brewster of Scoonie, was possessed of literary talents, and was one of the *Encyclopædia* writers. He had also considerable musical talent, but he turned his attention principally to parish business, and while preaching excellent sermons, and commanding universal respect in his Fife parish, he did not fulfil further the promise of his youth. Patrick, the youngest, who became one of the ministers of the Abbey Church of Paisley, was gifted with most versatile genius; but had that touch of eccentricity which so frequently mars the finest gifts, and while using these he sometimes, although unintentionally, abused them. Balked in his strong desire for a military or naval life, and meeting with one of those disappointments which, unlike the gentle love-story of David's boyhood, scathe and blight a sensitive life, Patrick's energies found in later days fuller scope in

[1] "It's Dr. Brewster's prayers," is a frequent exclamation amongst the old people, when another and yet another conversion to new life takes place amongst the fisher families and their neighbours.

politics than in the calm routine of parish life. His peculiar gifts were music, painting, and oratory. Printed sermons and addresses of the finest composition still remain, but he was accused of turning his eloquence to bad account, and he was much reprobated for his Chartist and Radical views. With all his mistakes in judgment, however, he was emphatically a man before his time, and most of the subjects of his greatest agitation are now received without a question, such as the repeal of the Corn Laws and the lowering of the franchise. His riper views, indeed, were not more Radical than those brought into practice by the Conservative Government of 1866. His abhorrence of Popery was latterly extreme, and his unceasing efforts to expose the abuses of parochial power were useful in calling the attention of the public to the many evils connected with the Scotch Poor Laws.

With the knowledge of his father's wishes, his brothers' compliance with them, and an evident interest in theological studies, no different course seems to have entered into David Brewster's mind; and when fears of the incompatibility of the two pursuits did intrude, it was evident that Science was the one he intended should give way, as we see in the following extracts from letters to Mr. Veitch :—

"EDINBURGH, *December* 26, 1800.

" . . . The truth is, I have been so much engaged in studying Divinity since I saw you last, and on that account have had so little leisure for paying attention to astronomy and optics, that I have scarcely seen any new book upon these subjects since I left Jedburgh. I am happy to hear that you have such a good specu-

lum for your seven-feet reflector, and that it shows so distinctly. Indeed, I am perfectly convinced of the truth of your remark, that the best telescopes are produced by frequent trials, and by choosing the best and rejecting the worst. But though this is the method which Herschel generally takes, yet I do not think it redounds greatly to his honour when he tells us that he often made a hundred without hitting upon a good one."

"EDINBURGH, *March* 12, 1802.

"... I have been so much engaged of late in writing discourses for the Divinity Hall, that it has been out of my power to answer your former letters, and till the end of next month I am afraid I shall be in the same situation. I have never seen the instrument which you mentioned in your last. There is one of a similar nature in the Natural Philosophy class here. When the picture of a woman extremely distorted and deformed is placed before it, the image in the mirror is perfect and well-shaped. It is nothing more than a cylinder of the common metal used for reflecting telescopes, polished on the outside. It is only a picture of a certain form which answers, and I believe it is made in the following manner :—The picture of a handsome woman is placed before the cylindrical mirror. The image of the picture will consequently appear behind the mirror very much distorted and out of shape, and if this image is drawn upon paper and placed before the polished cylinder, it will appear handsome and perfect. I wish you would give me a description of the other in your next letter."

"EDINBURGH, *February* 17, 1803.

"My attention of late has been completely turned

from my old and my favourite studies, so much so, indeed, that I am sometimes afraid that I shall never be able to fix it upon them again."

In the midst of all the varied study it is pleasant to see how David could turn his whole attention to answering, to the best of his ability, "without assistance," as he himself says, a question put by Mr. Veitch:—

"EDINBURGH, *October* 16, 1801.

"DEAR SIR,—I received yours, and shall endeavour, as far as I am able, to explain the passage of Matthew which you have mentioned. It has long been a dispute among divines whether or not all prophecies have double senses, that is, refer to two events at the same time, and a great many learned men have defended each side of the question. Now, if we believe in the double senses of prophecy, it is easy to explain the whole 24th chapter of Matthew, by saying that it refers, in the first part, to the destruction of Jerusalem, and in the last, to the end of the world; but still a difficulty occurs in the 34th verse, where it is said that this generation shall not pass away till all these things be fulfilled. I do not agree, however, with those who believe in the double sense of prophecy, as it is contrary to that simplicity which ought to be expected in the sacred writings, and would therefore explain the chapter in a different manner, as referring wholly to the destruction of Jerusalem. In the 3d verse, the coming of Christ and the end of the *world* (or rather, the end of the *age*, as it is in the original), signifies nothing more than that period when the Jewish Polity and State should be completely overturned, and the Christian dispensation become more

firmly established, by the destruction of its enemies, and by the interposition of Christ in the overthrow of Jerusalem. The prophecy in the 29th, 30th, and 31st verses, which contain the greatest difficulty, appears to me to have been fulfilled at the destruction of Jerusalem. Christ might with sufficient propriety be said to come in the clouds of heaven, in power and glory, when at that time the most wonderful appearances in the heavens took place that were ever seen. The stars may with propriety be said to fall from heaven, when lightnings and great globes of fire destroyed the workmen appointed by the Emperor Julian to rebuild Jerusalem; and, if I am not mistaken, the sun and moon were actually darkened at the overthrow of that city. All the tribes of the earth might be said to mourn when so many thousands of Jews were slain in such a cruel manner, and when they heard of the dreadful barbarities which were committed upon them by the Romans. And the elect might properly be said to be gathered together from all quarters of the heavens, when the Christian religion, as it then actually did, extended itself rapidly over most countries of the known world, and brought the glad tidings of salvation to men of every description, nation, and language. This is the only consistent explanation of the passage which I can give without any assistance.—I am, yours sincerely,

"DAVID BREWSTER."

So few contemporaries of the subject of this sketch remain that we know scarcely anything of the social life of his early student days. Miss Stenhouse (Newtown St. Boswell's) recalls, however, the pleasant and merry country walks he took with herself and her

brothers, in which David's exuberance of spirits seems to have been vividly impressed upon her memory; and on one occasion, during a holiday trip, when he considered that he had bordered on the irreverent by untimely laughter, it is touching to hear of his penitence. "He was very much put about, and spoke of it often on our way home." This lady writes also that in 1859, at the railway station in Edinburgh, two of these early companions met, both bordering on their fourscore years. One went frankly up and shook hands, but the other could not recall the altered features. "What! don't you recollect David Brewster?" brought up the long forgotten past, and "they were very happy to meet."

David's College career was marked by brilliancy as well as solidity. At the age of nineteen he added M.A. to his name, and in the same year (1800) he made his first discovery, an important event in the life of so young a philosopher, which was to be frequently honoured by the same useful way-marks. It was in his favourite science of Optics, discovering a new and important fact, while submitting the Newtonian theory of Light to a serious experimental test. At the age of twenty we find also the commencement of his independent literary career. Before that period he had regularly written for the *Edinburgh Magazine*, a periodical combining science and literature, but he then became its editor. The volumes that remain contain much interesting matter. The following letter to Mr. Veitch refers to this busy period. Mr. James Fair was one of the young Jedburgh and Inchbonny *literati*:—

"EDINBURGH, *August* 6, 1802.

"MY DEAR SIR,—As I have been very much engaged

since the receipt of your letter in conducting the *Edinburgh Magazine*, and in preparing for going to the country, it has been out of my power to write you sooner. . . . I am very sorry to hear that Mr. James Fair is ill pleased at me for the rejection of his paper. You may render my compliments to him, and tell him that at that time I had no power either to admit or reject any paper that was sent to the *Edinburgh Magazine*. His other paper also, on Humanity and Gratitude to Animals, arrived just before the editorship of the Magazine devolved upon me, so that for its rejection I am not answerable. So far was I from wishing to discourage Mr. Fair, that I would have exerted all my influence with Dr. Anderson to get his papers admitted, had I not been conscious that the very admission of them was injurious to the author himself. From his last paper I observe that he is improving rapidly in composition, and I am sure he would have been sorry about a year after this if he saw two of his papers laid before the public which he knew to be replete with inaccuracies. Mr. Fair composes as well as any young man can be expected to do who has not dedicated to it a great deal of his attention; and I am sure that if my first compositions, or those of any other young man who is not much accustomed to write, were given to the world, they would cut a very awkward figure indeed. If you look at last *Edinburgh Magazine*, which you will get from my father, you will see some interesting scientific notices which I collected from a variety of quarters, and a curious paper on Ventriloquism, which I inserted, as it is the first explanation of that curious phenomenon which was ever given. I set off to-morrow for the North, and will probably see you at Jedburgh in the

space of three weeks. Excuse this scrawl, as I have all the literary and scientific notices for next Magazine to write this forenoon, and believe me your affectionate

"DAVID BREWSTER."

To all these arduous tasks Brewster added those of tuition. In 1799 he became tutor in the family of Captain Horsbrugh of Pirn, in Peeblesshire, remaining with them, more or less, till 1804. At first he resided with the family in George's Square, Edinburgh, in winter, and at Pirn in summer, but when his eldest pupil went to an English school, Mr. Brewster found it more convenient for his multifarious studies to live in a lodging, and go in the evening to George's Square. One of his pupils, six years younger than himself, still survives, and remembers beginning her letters under his superintendence. He was a great favourite with the children, especially with those who could enter into his pursuits, often amusing and interesting them with his experiments, and especially with his own early favourite, the electrifying-machine. Miss Horsbrugh remembers the starts and the shocks she received, and also being occasionally left in the dark, when Mr. Brewster appeared among them with his outstretched hand and fingers all in an apparent blaze from phosphorus. She also remembers how characteristically busy he was even then with bits of coloured glass, making experiments upon Light, and how he was often late at night observing the stars. Some of his scientific practices greatly incensed Mrs. Dickson, the housekeeper, who declared that he would never rest till he had set the house on fire.

One is thankful to find, even during his student days, some traces of the relaxation and exercise which must have been so needful in such a busy life. In 1802, David made a tour of visits in Fife and Forfarshire, visiting, amongst others, his uncle, Dr. Key, at Forfar, and taking a trip to St. Andrews,—of which old city an interesting account had appeared in the *Edinburgh Magazine*,—little dreaming of the twenty-three years of his later life which were to be spent in its cloistered shades.

At that time the threatened invasion of England by the French was a cause of general fear and excitement. "Boney" was a universal object of detestation, and a bugbear even in the nursery, while the slumbers of adults were broken by uneasy dreams of kindling beacons and secret landings. The following letter, written in 1868, by the Rev. Mr. Ramsay of Gladsmuir, some years Brewster's senior, gives an account of his participation in preparations against this dreaded event:—

"One day at the end of last century, when in the College Court (Edinburgh), I met Mr. Brewster coming up from the Divinity Hall, and said to him, 'There is a public meeting to be held to-day in the Archers' Hall; let us go and see what is going on.' When we came there we found the hall crowded, and a committee was just formed for the purpose of establishing a volunteer corps in connection with the University, for the defence of the country against the threatened invasion of the first Bonaparte. I stated to the meeting that the committee, however respectable, did not consist of persons then acquainted with the state of the College. The late Lord Brougham, who was in the chair, said that there was a good deal in what the gentleman had

stated to the meeting, and proposed that I should be added to the committee, and also requested me, with the consent of the meeting, to mention another to act along with me as a member of committee. I immediately mentioned Sir David, who was standing by me, and after that he had frequent opportunities of waiting upon and consulting persons of influence in Edinburgh and the neighbourhood."

Brewster also endeavoured, with more good-will than ability, to prepare for practical personal efforts in the volunteering line. During his holiday visits to Jedburgh it is recorded that he practised shooting with the young volunteers on the Ana, a piece of waste ground close to the Jed, generally devoted to such pursuits, the mark being the opposite scaur, also called the Ana, from its vicinity to the shooting ground. Brewster's reputation as a shot had not much improved since the days of the "auld wood," and he frequently missed the mark. His philosophy, however, generally furnished him with some apology—a favourite one being that the attraction of the water had deflected the bullet from its proper course. This always produced a burst of amusement and argument, in which on one occasion a determination was expressed to refer the vexed question to James Veitch, their great scientific referee. "No, no," said Brewster with *naïveté*, "don't do that; he 'll be sure to give it against me!"

Verse-making too mingled its lighter thread amongst the sterner warp and weft of the student's daily occupation. The keenest appreciation of poetical beauty, and a wish to clothe his thoughts in that garb, accompanied him through life, but the two following poems are, as far as I know, the only ones which were ever

printed. The first is taken from a little volume of songs printed in Jedburgh about forty years ago. Mr. Veitch, although a kind patron of local poets, who generally brought him their compositions, highly disapproved of his young philosophic pupil wasting his time in verse, and used to cast a doubt on the perfect originality of the "Banks of Jed," but this is believed to be a mistake.

"When evening decked in grey appears
To wrap creation in her shade,
I wander 'mong the fragrant briers
Down by the silvan banks of Jed.
Memory recalls those joyous scenes,
Those joyous scenes for ever fled,
When Anna listened to my strains
While wandering on the banks of Jed.

The milk-white thorn[1] in yonder vale,
Still blushing with the twilight red,
Minds me of Anna's glowing smile
When roaming on the banks of Jed.
When with a sweet and murmuring noise
The stream rolls o'er its pebbled bed,
Methinks I hear my Anna's voice
Re-echoing from the banks of Jed.

The breathing gales, which health renew,
And sweetest fragrance round thee shed,
Recall the heavy sighs we drew
When parting on the banks of Jed.
But, ah! no stream nor milk-white thorn,
No breathing gale can make me glad,
Till Anna to these scenes return
To meet me on the banks of Jed."

By this time the influence of the early love had waned, and another had appeared on the scene, celebrated in the above and in various other poems as "Anna," and in one as the "Rosebud of Glenae." Mr. Brewster had been recommended to the family of Pirn

[1] An old thorn-tree, now rather stunted, in the field beside the Jed, opposite the scaur, near Bonjedward.

by Mr. Scott, the minister of Innerleithen, who was married to Miss Chisholme of Chisholme. One of their two lovely daughters was the "Anna" of Mr. Brewster's admiration, although her name was the less poetical one of Agnes. She died at an early age, and David was much affected. He wrote a poem of twenty-four stanzas on the occasion, which was published in the *Edinburgh Magazine*, and also printed separately; the only copy of it in the latter form which is known to remain is retained in the family as an interesting relic of the past. It was kindly lent to me by Miss Scott Chisholme, who also showed me the miniature of her beautiful aunt. The following verses are extracted from it; and it is touching to observe that the every-day Scotch appellation is used instead of that of the less earnest lines,—Nancy being the Scotch "diminutive" for Agnes as well as for Anne:—

Soon shall verdant Spring, returning,
Waken flowerets from their tomb;
Soon shall *Sol*, with fresh flames burning,
Brighten up the deepened gloom.

But, alas! no Spring, returning,
Nancy's eyes can e'er relume;
But, alas! no ruddy morning
Can recall her orient bloom.

On her pillow flowers may flourish,
On her grave the sun may shine;
But can these our spirits nourish?
Can they wake her form divine?

As for me, I'll ceaseless wander
Round her verdant, hallowed grave,
Where *Leithen's* crystal streams meander,
Joining *Tweed's* proud classic wave.

Ere the sun, from yonder mountain,
Tip these hills with orient hue,
I'll repair to sorrow's fountain,
There to bathe my eyes anew.

Hope's bright eye in time of trouble,
  Views with triumph yonder coast,
Where our bark, forlorn and feeble,
  Shall no more in storms be tossed;

Where Disease, and Death, and Anguish
  Shall be banished our abode;
Where our joys shall never languish,
  With our friends and with our God.

Cease, then, mourners, cease complaining,
  Cease deploring Nancy's lot:
On that coast she now is reigning,
  Evil banished, pain forgot.