SOME CAMBRIDGE PROFESSORS OF CHEMISTRY

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VERY few of those educated in Oxford or Cambridge have any clear idea as to the origin and inception of the innumerable anomalies and inconsistencies under which they live. Certainly no one who has not been educated at these ancient seats of learning can pretend to appreciate the haphazard way in which things have come about. My old friend, Ambassador Page, used to stay in my Lodge from time to time during the war, when his weak health and overwork enforced upon him such needed rest, and for the life of him he could never make out what we were all doing. I used to try to explain, but never succeeded in making things clear to him. All I could say was, "It is all quite irrational, *but the thing works.*"

And so it was with our professorships. This university, which consists of some eighteen colleges, existed hundreds of years before there was a single professor. The proctors date back to 1314, the chancellor to 1412, but there was no professor in the university until that mother of learning—Lady Margaret, Countess of Richmond and Derby, and the rightful heiress to the throne of England who abandoned her claim in favour of her son, King Henry VII—endowed in 1502 the Lady Margaret's professorship in Divinity. Soon after the dissolution of the monasteries, which led to the foundation of the fortunes of a new nobility in Tudor times, the rapacious courtiers urged upon King Henry VIII a breaking up of the older universities and a division of their property among the greedy members of his court. But, like all Tudors, Henry VIII was a remarkable and a well-educated man, of strong force of character and great ability.

He sent for the university accounts, and after going carefully through them he remarked that he thought he had not in his realm "so many persons so honestly mayntayned in lyvyng bi so little land and rent." So he repulsed the "ravening wolves", and promptly proceeded in 1540 to found professorships of Divinity, Hebrew, Greek, Physic, and Civil Law. Nearly one hundred years later Sir Thomas Adams, draper of London, founded a professorship

of Arabic, and during the same century chairs were endowed in Mathematics, Moral Philosophy, and Music. A very varied and diverse crew!

It is with the professorship of chemistry that this article is concerned. That chair was founded in 1702, but it was unendowed, and the university contributed nothing to it except the use of a lecture-room. In 1766 the Crown provided a stipend of £100, which was continued till past the middle of last century, when the university took over the obligation. In 222 years there have been eleven professors of chemistry, one or two of whom may deserve a passing notice. The earliest was a certain Veronese, John Francis Vigani. He was one of those wandering scholars who had travelled extensively in Europe and had finally settled down in Cambridge. Here he gave private tuition in chemistry and pharmacy, but he had no official connection with any college, or indeed with the university. His success in teaching was such, however, that in 1703 he was invested with the title "Professor".

The next of note was Richard Watson, chiefly remarkable not for his knowledge of chemistry—although he did much to aid Pitt in the manufacture of gunpowder during the Napoleonic wars—but for being a notable example of the eighteenth-century divine. He was a poor student, and received certain emolument as a sizar from Trinity College. His "blue worsted stockings and coarse mottled coat" were for a long time the subject of comment in the university. In 1764 he was unanimously elected professor of chemistry, in spite of his statement that he knew nothing about chemistry, nor had he "ever read a syllable on the subject or seen a single experiment." But he "got the subject up", as the manner of those days was.

Seven years later he managed to work a way round the Statutes, and was unanimously elected to the Regius chair of Divinity. Here again he frankly admitted that he "knew as much of Divinity as could be reasonably expected of a man whose course of studies had been directed to other subjects". However, again he got the subject up. He had a sinecure rectory, and later was prebendary of Ely, though there is little evidence that he ever did anything to justify either appointment. He held other clerical preferments, and was finally—in 1782—consecrated Bishop of Llandaff, when he reckoned that the whole of his emolument amounted to but £2,200 a year. Later he came into an estate of over £20,000, and being comfortably off he resided in the Lake district, where he devoted himself to the extensive plantations on his estate. Naturally he had gout, and it is recorded that his sons at any rate indulged

freely in the sport of cock-fighting. Altogether, he was a typical eighteenth-century cleric, with a certain kind of ability.

William Farish was professor of chemistry, 1794-1820, and—as was the habit of those times—he became later Jacksonian professor of Natural and Experimental Philosophy. This chair he held until 1837. He was also rector of St. Giles. He lived in Merton House, and being a man of mechanical turn of mind he devised a partition which could be raised or lowered. When it was lowered, it separated his study from an adjoining living-room; when it was raised, a large double bedroom was turned into two single bedrooms. On one occasion, when the house was filled with young people who had retired to rest, he retreated to his study, and feeling the cold he lowered the screen. The result of this was that a young man and a young lady who had retired in different rooms woke up to find themselves in the same bedroom. History does not record what happened, and no one I have ever consulted has been able to suggest a reasonable solution to so awkward a predicament.

Coming to more modern times, we find that in 1815 James Cumming succeeded to the chair of chemistry. He and his successor, George Downing Liveing (professor from 1861 to 1908), held it between them for ninety-three years. If Professor Liveing had not resigned long before his death, the tenure of the two would have easily covered the century. Cumming was an excellent teacher, and continued to lecture until he was eighty years old.

Until the Royal Commission of some fifty years ago, the colleges were dominant in the university. There were, it is true, certain professors, but the great bulk of the teaching was done within the college walls. The numerous clerical Fellows had to have some means of justifying the receipt of their incomes, and unless he was an exceptionally gifted teacher—such as Adam Sedgwick or George Henslow—a professor did not get a reasonable chance of exercising his functions. At the time when the late Right Hon. Sir William Harcourt, Chancellor of the Exchequer, held the Whewell professorship of International Law, 1869-1887, it was obligatory for the occupant of this chair to lecture to at least ten resident members of the university. Otherwise he would not receive his stipend. Harcourt was, like many of the professors in those days, non-resident; but he had the finest set of rooms in Trinity College, and in order to ensure his quorum he used to invite ten students to breakfast at 8 a. m. They could hardly avoid attending his lecture, which was delivered punctually at 9.

Thus when practical chemistry was first started in the uni-

versity, it began with the erection of laboratories by two or three colleges, and in his own college—St. John's—Liveing taught. He had been placed at the top of the newly established Natural Sciences Tripos in 1851, and three years later we find him appearing as examiner. Until that Tripos and the Moral Sciences Tripos had been established, the teaching for Honours in the university was entirely mathematical or classical, and mathematics predominated.

In the old times the professors took a very small part in the teaching of students, except in those subjects which are purely technical, such as human anatomy and law. Liveing, immediately after taking his degree, began teaching chemistry, but in his own college, which has built a small laboratory for chemical and physical purposes. In 1861, when he became professor, chemistry was being also taught in two or three moderate sized rooms situated in the old Botanic Garden. As far back as 1696, however, a new printing house had been built on what is now the site of the Master of St. Catherine's garden, but twenty years later it was made over to the professors of anatomy and chemistry, because—in the words of the Grace—"it was of no use to the university for any other purpose." *Academiae alioquin infructuosum.* This proved wholly inadequate, and in 1832 the small rooms on the Botanic Garden site were occupied. Here it was that I first came across chemistry in the university. On a cold March afternoon I found myself engaged as a candidate for an Open Scholarship in those gloomy and ill-lit apartments, trying to solve the simple chemical problems of the day. The gentleman who presided over the examination had every appearance of a Jesuit Father, but he could not have been one, because some years later he died in the odour of sanctity as Bishop of Bloemfontein.

Liveing at first had few students; indeed there were but some half-dozen candidates for Honours in the first two or three years of the Tripos. But things grew. In 1872 a new students' laboratory was added to the small provision that already existed. In 1885 the professor persuaded the university to put up what was at that period the finest chemical laboratory in the country. Liveing took endless pains over the planning and fittings of the new building. He visited many continental institutions of the same character, and he succeeded in putting up a laboratory which is architecturally handsome, and one which—in his own words and those of his colleague, Sir James Dewar—"we are glad to be able to state.... fully answers our expectations." With increasing numbers of students the chemical laboratory has been added to from time to time.

At the date of his retirement (1908) there were 250 students and researchers working in his laboratory, and at the time of his death there were three times that number.

Liveing was very much master in his own house. Many chemical experiments require watching night and day for some periods, and chemical reactions will continue to go on during Sunday; but Liveing allowed no one to enter the laboratory after it was closed in the early evening, or ever on Sundays. Consequently, certain important experiments had to be conducted in the college laboratories. He was a man of the simplest tastes, and rather effaced himself. He preferred to be in the wings rather than in the limelight. He seldom took a prominent part in those debates which are believed by some to influence the policy of the university, but he could and did at rare intervals speak out with no uncertain voice. Physically he was very strong, and as an undergraduate he rowed in his college boat. When he was past 95 he was actively engaged in gardening, cutting up wood, and other activities which gave him the exercise he so much enjoyed. Being a landlord he took a keen interest in horticulture and agriculture, and it was due to his initiation that the great School of Agriculture at Cambridge came into being. He was ceaseless in his attempts to promote this new study, and its success is one of his greatest monuments.

Liveing was a man of terse, almost curt, speech. His friend and pupil, Mr. J. P. Millington, has recorded this anecdote about him:

> Liveing had a great objection to being interrupted when at work in his private room in the laboratory. On one day I was asked by a man whether he could see the professor, and where was his private room. My reply was that the professor did not see people except by appointment, but—there was his room. The man explained that he had come especially about the insurance of the laboratory buildings and contents. I could do no more than point to the door behind which the professor worked,—and wait. I heard three taps on the floor; a voice said "Come in"; a louder voice "Go out"; a shutting of the door. I retreated with discretion.

Like many men of his period, he had a great objection to tobacco smoke, and an equally great objection to draughts, which he used to declare he had spent a lifetime in combatting. Another rooted objection he had was to wearing a necktie. He always wore flannel shirts, and instead of the necktie a large Cornelian stud, almost as big as a brooch. However, he did not see much of it, as it was hidden by an ample beard.

When I was a student he used to be rather irascible, and he

somewhat spoilt his lectures by interfering with the laboratory attendant who was demonstrating certain experiments before the students. If he had been a little more patient and a little more calm, the experiments would have been pulled off. As it was, he was frequently reduced to saying "Although the experiment has failed, the principle remains the same." He was a very earnest teacher, going round the laboratory every day discussing and criticising the work of the students. He had a great intolerance of anything approaching slovenliness. In spite of his very active life in teaching and organizing, he has left a permanent name as a researcher. His investigations into spectroscopy with his colleague, Sir James Dewar, remain a standard work on the subject. Even during the last few years of his life, in spite of his great age, he was occupied in carrying on a long and difficult experimental research on Radiation in the Metallurgical Laboratory, and indeed it was on his way to that building to continue his research that he met his accident which ended fatally.

With a brusque exterior he had an extraordinarily kind interior. He was eminently just, eminently sane, and in his own way eminently helpful to the poor. He was generous to poor students, and helped many of them on their academic path, but he was particularly interested in the unfortunate inhabitants of the county gaol. He visited them weekly, helped them when released, and enabled them to regain their self-respect. As a writer has already said, "No better epitaph could be written of him than the lines Fitzgerald adapted from Crabbe:

> Friend of the Poor—the Wretched—the Betrayed,
> They cannot pay thee—but thou shalt be paid.