Biographical Byways.[1]

By Sir ARTHUR SCHUSTER, F.R.S.

8. THREE GÖTTINGEN PROFESSORS, AND AN ADVENTURE.

WHEN I went to spend two months at Göttingen in the summer of 1874, Wilhelm Weber (1804–1891) had just retired from the professorship. I doubt whether the present generation of physicists are familiar with his work, though there was a time when electricians talked about weber-currents, galvanic-currents, and faradic-currents as if they were different things. I feel sure, however, that chemists have not forgotten Friedrich Wöhler (1800–1882), who occupied the chair of chemistry at the University of Göttingen during forty-six years. Both men were Copley medalists. Wilhelm Klinkerfuss (1828–1884) stands on a somewhat lower level of distinction, though he did meritorious work, was amongst the first to recognise the importance of Döppler's principle, and discovered six comets.

When Weber was first appointed to the chair of physics at Göttingen in 1831, that University formed part of the kingdom of Hanover. When its connexion with England was finally severed in 1837 by the accession of Ernest August to the throne of Hanover, the new king repudiated the constitution which the country had enjoyed for a considerable time. Seven professors of Göttingen protested against this autocratic action and had to leave the country. They included, besides Wilhelm Weber, his brother, the physiologist, and Jacob Grimm, the writer of fairy tales. Weber was offered a chair at Leipzig, where he remained until he was reinstated at Göttingen in 1849. In 1874, at the age of seventy, he was still full of vigour. A short man with a clean-shaven, round, and smiling face, he was ready to discuss the current scientific problems with freedom and sagacity. I much enjoyed the two occasions on which he invited me to join him in his walks along the walls of old Göttingen.

A man's mentality often finds significant expression in the way in which he shakes hands. Kopp, of Heidelberg, used to raise the proffered hand slowly to the level of his short-sighted eyes, and keep it there for a few seconds as if wondering what to do with it. Weber raised his arm vertically upwards and swung it down in a swift and forcible sweep, as if he really meant it. I was told that, under the influence of Zöllner, Weber had taken up spiritualism, but I never knew that side of him.

In contrast with Weber, Wöhler seemed to live entirely in the past. I only spoke to him twice, but while fond of relating old reminiscences, his conversation generally ended in a recital of his personal ailment. I can only remember one of his tales. He had an official residence above his laboratory, and one night he was awakened by the noise of an explosion. He gave a graphic description how, with a candle in his hand, he went down to see what had happened. At the point of opening the door—he hesitated. Could there still be some explosive gases hovering round the laboratory? He blew out the candle and entered the room, and found indeed that he had narrowly escaped losing his life by a second explosion. There is not much in this story, but Wöhler seemed to be very proud of this testimony to his presence of mind.

I had called on Wöhler at the express wish of Roscoe, who sent him, through me, a small flask filled with vanadium salt. Wöhler was delighted, and could scarcely believe that this was for him to keep and not only to look at. He had been doing some work on vanadium himself with only a small quantity at his disposal, and on every occasion that I met him he always expressed surprise that Roscoe could spare so much of it. The day following my first call, on returning to my lodgings, I found a visiting card with his name neatly written on it.

Klinkerfuss was a man of different type and calibre. He generally took his meals in common eating-houses surrounded by students, and occasionally I was one of the party. He used to entertain us with inferior jokes. One example must suffice. "I have always had a remarkable memory for numbers," he said. "At school in the history lesson I could remember every date. Unfortunately, I always forgot what happened on the dates." It was said of him that when he received his salary he spent his money lavishly eating and drinking in the most expensive places, and when he had spent nearly everything he lived mainly on sausages and beer. His duties sat lightly upon him. By a general rule of the German universities, a professor is not obliged to lecture to less than three students (*tres faciunt collegium*), and when at the beginning of term one of them called to inscribe himself for the course which had been announced, Klinkerfuss told him that he would have to find two others who also desired to attend. It was said that if half an hour later another man came with the same request, he received the same answer, and it was only when the term was in full swing that the disappointed students became known to each other. I do not vouch for the story. The facts that the fees go to the professors, and the well-known impecuniosity of Klinkerfuss, speak against it. He ultimately ended his life by committing suicide.

There was another professor at Göttingen, a philosopher and theologian, with whom I had some acquaintance. When I called on him, he warned me that the life in Göttingen was different from that at Heidelberg. The students were more formal, and inclined to take offence if one did not conform with their codes of behaviour. It was not many hours before I had occasion to regret that I did not attach more importance to his warning. The evening of my visit to him I went to some open-air place of entertainment where I met an acquaintance, who was accompanied by three other students. He asked me to join his party, but I told him that I was on my way home. Ultimately, he persuaded me to sit down for a few minutes. While I was talking to him I overheard remarks, made by his companions, about the impertinence of sitting down at a table without a proper introduction. I knew I was in for it, but awaited developments. Suddenly one of the men got up, placed himself right in front of me, clicked his heels together, and said, "My name is von

[1] Continued from p. 234.

Eberstein" (the names are imaginary). I gave him my name in return. After a minute or two the second man got up: "My name is Goldschmidt." I gave him my name. When the third man got up I fortunately remembered that I had a trump card to play, and after he had gone through his ritual I replied, "My name is Dr. Schuster," laying stress on the title. Whereupon all three silently left in a body. My degree was a sufficient distinction in rank to justify me in dispensing with the formality of asking for an introduction to them. I asked my friend what would have happened if I had not been a graduate: his reply was, that I should have had either to fight at least one duel or been treated as an outcast by German universities. All this happened fifty years ago, and must not be considered to apply to the present day.

Obituary.

SIR JAMES MACKENZIE, F.R.S.

BY the death of Sir James Mackenzie the medical profession and the world at large has lost a physician whose life was devoted to the advancement of our knowledge of practical medicine. His researches on diseases of the heart effected nothing less than a revolution in this branch of medicine, which had been stagnant for nearly a century.

Sir James Mackenzie was born at Scone in 1853, and received his medical education at the University of Edinburgh, where he graduated in 1878. After extending his training by resident appointments in the Royal Infirmary he took his M.D. in 1882. Then followed twenty-eight years of busy general practice in Burnley, and it was during these years that he made the greater part of the observations which made his fame. It soon struck him, as it must strike many medical men, that for the diagnosis and treatment of a vast proportion of illness, his teachers had been unable to give him anything like adequate guidance. Mackenzie, greatly stirred by discontent, set himself to the filling of some of the gaps, and two examples of this pioneer work may be mentioned. The value of pain as a guide to diagnosis was realised when he found that it was referred from the offending organ to particular areas of the surface of the body through the agency of the nervous system, and that the organ was not itself painful. This fundamental change in the conception of pain was independently discovered and extended by Dr. Henry Head. Another gap so brilliantly, almost completely filled, was the classification of the irregularities of the heart. For this purpose Mackenzie invented a clinical polygraph for recording not only the pulse but also simultaneously the venous pulse in the neck. It thus became possible for the first time to observe the action of the auricle, which proved a key to the elucidation of arrhythmia. Irregularities and murmurs were shown to be significant or insignificant by the rational, though laborious, method of following cases exhibiting them for years until their degree of importance became manifest.

Great interest was aroused at home and abroad by the immediate value of these discoveries, and when Mackenzie relinquished his general practice at Burnley in 1907 to take up consulting work in London, he was recognised as the foremost investigator and authority in the world on heart disease. His popularity as a consultant was not allowed to interfere with research, which was continued first at the Mount Vernon Hospital and later at the London Hospital. The action of digitalis in disease was studied to such purpose that, as Prof. Cushny has said, "more progress was made in fifteen years than in the preceding century." The impetus of progress was given to disciples from all over the world, and to them were opened fields of thought and work which seem sufficient for a generation.

When the War came, Mackenzie initiated through the War Office a special hospital for the elucidation of problems connected with "soldier's heart." In 1918 he retired from consulting work and went to St. Andrews, where he founded the Institute for Clinical Research. He had realised that attention was habitually directed to fully developed disease, so that, as he said, patients seemed to be admitted to hospital when they had the physical signs of obvious disease and might almost be described as incurable. He determined to study afresh the nature of symptoms as met with in practice, so as to learn of disease in its early and perhaps curable stage. As time went on, he foresaw that the phenomena of disease might be governed by simple laws which he formulated as a basis for further examination by his colleagues at the Institute. Then his health failed, but not his faith and courage, and he finally retired to London, where he died on January 26.

Mackenzie's personal qualities were an ornament to the greatness and originality of his mind, and endeared him to all his pupils. He was indefatigable himself, an inspiring and generous master, a superman, but none was more human. His personality will remain as worthy of admiration as was his relentless pursuit of knowledge, not only for its own sake but also for its application in the relief of suffering humanity.

In 1911 Mackenzie was appointed physician to the cardiac department of the London Hospital. In 1915 he became a fellow of the Royal Society, and received the honour of knighthood; later he was appointed honorary consulting physician to the King in Scotland. His most important works are "The Study of the Pulse" (1902), "Diseases of the Heart" (1908), "Symptoms and their Interpretation" (1909), "Principles of Diagnosis and Treatment in Heart Affections" (1916), and "Angina Pectoris" (1923).

MR. WILLIAM WATSON.

WE regret to announce the death of Mr. William Watson, which occurred at St. Albans on January 30. He was well known in botanical and horticultural circles through his long tenure of the curatorship of the Royal Botanic Gardens, Kew, a position he held from August 1901 until June 1922.

Mr. Watson was born at Garston, near Liverpool, on March 13, 1858, and received his first appointment at Kew in 1879, following several years' experience in trade establishments. His knowledge of tropical and sub-tropical plants was probably unrivalled. For many years he was a regular contributor to the