

## Science News a Century Ago

### The Grand Junction Railway

THE most important addition to the railways of Great Britain in 1837 was the Grand Junction Railway, uniting Birmingham with Liverpool and Manchester. The Bill for the line had been passed in 1833, and in 1834 the directors appointed George Stephenson and Joseph Locke as joint engineers. Stephenson withdrawing in August 1835, Locke became engineer-in-chief, and the line was constructed under his supervision. The opening of the line took place on July 4, 1837, when a train left Newton on the Liverpool and Manchester Railway at 7.0 a.m. and, after stopping at Crewe, Stafford and other places, finally arrived at Birmingham at 11.30 a.m. The distance was 82½ miles. Describing the events of the day, the *Morning Herald* said: "From Wolverhampton to Birmingham a general holiday appeared to be observed and the scene was highly interesting both to the observed and observers. Tents were pitched in several fields, and parties given by the respective tenants in honour of the day. The weather was extremely beautiful, and the freedom from dust which exists on railways is another interesting feature connected with this branch of mechanics." Among the most notable works on the line was the Dutton Viaduct, over the valley of the River Weaver.

### Death in the Candle

UNDER this sensational heading the *Lancet* of July 8, 1837, contains the following account of a meeting of the Medico-Botanical Society held on June 28: "Mr. Everett detailed the results of several experiments made with the view of ascertaining the constituents of some 'new composition candles' which have lately been much employed by the public. His attention had been called to the subject by his having detected a strong garlic odour from the burning candles similar to that given out during the combustion of metallic arsenic. He purchased candles from various vendors of them, and, after considerable trouble, discovered a method by which he could collect a large quantity of the condensed smoke given out during their burning. He broke off the bottom of a glass retort with a very long neck, and placed the burning candle under it, the smoke having to traverse the lengthened tube was deposited on its sides. On carefully collecting this matter, and subjecting it to all the most unequivocal tests for arsenic, that metal was in every instance detected. The quantity contained in each candle would, according to the quantity collected by the experimenter, be about two grains; but in consequence of the difficulty in preventing the escape of a large quantity of the smoke, he considered that double that quantity might be fairly inferred to be present. He supposed the makers of the candles used this metal for the purpose of giving the candles a better appearance, and to give them a higher melting point, and this had since been acknowledged to him by a manufacturer of them, as the fact, the arsenic being found an excellent substitute for a small quantity of wax which answered the same purpose. Now, the question was to be decided whether or not this quantity of arsenic burnt in a room was injurious. . . . He (Mr. E.) would say that the vapours of metallic arsenic were fully as if not more noxious than those of sulphuretted hydrogen."

### Medical Practitioners in Russia

THE *London Medical Gazette* of July 8, 1837, contains the following account of medical practitioners in Russia at that time:

"There are several classes of practitioners, but the deference paid to each is not in a ratio with their medical, so much as their military or civil rank. The degrees conferred by the universities are the following: Physician, Surgeon-in-Chief; Surgeon-in-Ordinary; Staff Surgeon; and Surgeon's Mate; Hospital Mate; Barber Surgeon; Apothecary. In general practice there is no positive distinction in the labours allotted to the first three ranks. The physician and the surgeon, in most cases, practise indiscriminately all branches of the profession. The physician receives homage from the surgeons, takes precedence as he passes through the wards of the hospital, signs documents and makes valid his rank by several operations. The hospital mates dressed in military uniform, march up and down the wards, half face about and stand to attention, as their superiors command them. The hospital mates and surgeon's mates are completely under military control, although attached to civil institutions. The apothecaries . . . are mere vendors of drugs and preparers of recipes, and their shops are all licensed by Government. . . . The last class is the *Tsirulnik* or barber surgeon, and is a numerous and thriving brotherhood. It falls to their lot to bleed, cup, draw teeth, apply leeches, and perform other little odd jobs of minor consequence. . . . There are no distinct aurists; aural surgery forming part of the practice of ordinary surgeons. There are likewise but few oculists who devote their whole time to diseases of the eye. Many physicians and surgeons include the treatment of these diseases in their general practice. Dentists abound in every street, and their profession is perfectly distinct, and not within the pale of the medical faculty. There are no distinct chiropodists in Russia."

### Schönbein and Faraday

ON July 9, 1837, Schönbein wrote to Faraday, sending him copies of a book containing an account of his researches on iron dedicated by Schönbein to Faraday. He expressed his regret at not being able to visit England for the meeting of the British Association, and asked that a copy of his book might be presented to the Association if such gifts were received.

In the course of his letter, Schönbein said: "The other day I got a letter from Mr. Berzelius, the contents of which relate to my observations on the peculiar state of Iron. The distinguished Chemist, though he does not yet give a decided opinion upon the subject, is inclined to think, that in one notice of yours, published some time ago in the *Phil. Mag.*, which alludes to the observations of Ritter and de la Rive regarding the secondary poles and the electrical state of polar Platina-wires, the true cause of the inactivity of Iron is hinted at. According to the view of Berzelius, Iron performing the function of the positive Electrode undergoes a change with regard to its primitive electrical condition in such a manner as to be turned from a positive electrical body into a negative one. As my views with respect to electro-chemical subjects essentially differ from those of Berzelius, I cannot on this account think the ideas of that Philosopher correct. . . ."