

and the others, which are not volatile without decomposition, furnish water, furfural, carbon, etc.

In the molecule of cellulose the various groups are probably united together in consequence of the opening of the ring at an oxygen atom which does not form the furan ring, and in this way the cellulose molecule, forming a vast cyclic network, may bear some analogy to those of the albuminoids, in which the linking agents are nitrogen atoms.

Joseph Black and Belfast.

UNDER the title of "Joseph Black: His Belfast Friends and Family Connections" Mr. Henry Riddell has recently published in the Proceedings of the Belfast Natural History and Philosophical Society (vol. iii., 1919-20, p. 49) an interesting account of Joseph Black's connection with Belfast. As is well known, the famous chemist was born at Bordeaux, where his father, John Black, was a factor and wine merchant, but his ancestors for many generations back were Ulstermen, and he himself received his school education either in the old Latin School in Belfast, endowed by Earl Donegall in 1666, or at the hands of a Mr. Sprott, a schoolmaster of repute in that city. Up to the age of twelve Black was educated by his mother, Margaret Gordon, who is described as a woman of great force of character and many accomplishments. She was the daughter of Robert Gordon, a merchant of Aberdeen, and was married to John Black in 1716, by whom she had issue eight sons and five daughters, Joseph Black, who was born in 1728, being the fourth son.

The Blacks were of Scottish extraction, and were said to be descended from a member of the Clan Lamont who was known as Gillie-dhu on account of his remarkably black hair. Some of his sons, on the invitation of James I., passed over to Ulster, which had been laid waste and depopulated by the wars among the Irish chiefs and their clans. Their descendants, or some of them, settled in Belfast and anglicised their name to Black. One of them, John Black, the great-grandfather of the chemist, fought as a trooper against Cromwell. His son, also John Black, born in 1682, was a burgess of Belfast, and had a family of five sons, all engaged in "merchandysinge" in various parts of the Continent. The various members married into some of the leading Ulster families—the Eccles, Wilsons, Banks, Legges, Clarkes, and others. Jane Eccles, the grandmother of the chemist, was the daughter of John Eccles of Cranmore, who entertained William III. on his way from Carrick to Drogheda. The chemist's eldest brother, John, married Jane Banks, a member of one of the best-known families in Belfast. One of their granddaughters, Maria, became the wife of Lord Downs, and from them sprang two girls, Ann and Charlotte, who married respectively Lord Clonmel and Lord Seaton. Isobel Black, the sister of the chemist, married James Burnett, of Aberdeen; their daughter became the wife of Adam Ferguson, the moral philosopher and colleague, intimate friend, and cousin of Joseph Black. A descendant of one of his other sisters, Katherine, became the wife of Prince Waldeck and Pymont.

Two of Joseph's brothers, Samuel and George, returned to Belfast and took a prominent part in the municipal life of the town, holding the office of "Sovereign" (mayor) between times no fewer than seven times between 1772 and 1789.

Joseph Black, after a good grounding in classics and mathematics, left Belfast for Glasgow in his eighteenth year, entering the University, therefore,

considerably older than the usual run of matriculants at that period. He came almost immediately under the influence of two remarkable men, Dick, professor of natural philosophy, and Cullen, professor of medicine and lecturer on chemistry. The fact that Black was considerably senior to the majority of his fellow-students may have induced Cullen to offer him the position of lecture-assistant, and it was probably this fortunate circumstance that determined his career.

The great chemist, who died in 1799, was never married, and left no immediate descendants. It is evident from this short statement that he belonged to a family of noteworthy mental peculiarities, many members of which were characterised by remarkable powers and capacity. Joseph Black, so far as is known, is the only one who showed any striking predilection towards scientific pursuits, and there are special circumstances in his case which may serve to explain the direction of his inclinations. If, as the late Sir Francis Galton contended, high reputation is a pretty accurate test of high ability, Joseph Black certainly ennobled his ancestry. But an examination of their individual history seems to show that he is no less a debtor to those who went before him, and that his eminence is in no small degree due to qualities implanted in him by his Ulster upbringing and associations.

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The Sakura-jima Eruption of 1914.

PROF. OMORI has recently made two additions to his valuable series of memoirs on the eruption of the Sakura-jima (South Japan) on January 12, 1914. The fourth memoir deals with the continued changes of elevation in the neighbourhood of the volcano, and the fifth with the numerous earthquakes which preceded and followed the eruption (Bull. Imp. Earthq. Inves. Com., vol. viii., 1920, pp. 323-51 and 353-466). Until 1914 the Sakura-jima was an island in the Bay of Kagoshima, the inner bay to the north of it being a basin $12\frac{1}{2}$ miles long from east to west and $7\frac{1}{2}$ miles wide. A comparison of two series of levels made a few years before the eruption and in April and May, 1915, revealed a depression of not less than 20 in. in the northern part of the bay, and of from 1 ft. to $5\frac{1}{2}$ ft. round the coast of the former island, the centre of which was elevated in two places by as much as 30 ft. and 41 ft. In the winter of 1918-19 a new series of levels was made along the west and north coasts of the bay, from which it is seen that the depression of the inner bay gave place to an elevation, the mean rise from February, 1915, to December, 1918, being about 4 in. In 1917 a series of soundings was also made in the bay, and these show that there are three depressions (of maximum depth 85, 113, and 79 fathoms), the first being separated from the others by a submarine ridge running north from the volcano, and apparently due to the eruptions of A.D. 764, 1468-76, and 1779. Comparing the new soundings with those made in 1906, there are seen to be three areas of fresh depression (from 3 to 4 fathoms) coinciding with the three depressions, and two areas of new elevation, the more important one (of 3 fathoms) being near the submarine ridge. Prof. Omori estimates that the total resultant depression of the district amounts to about one-quarter of a cubic mile, and the volume of lava and ashes ejected to slightly more than one-half of a cubic mile, and he suggests that this difference may account for the defect of gravity sometimes observed in the neighbourhood of a volcano.

The records of the Sakura-jima earthquakes at Kagoshima ($6\frac{1}{2}$ miles from the volcano), Nagasaki