untiring diligence in the exercise of his duties as a mem­ber of the council of Two Hundred, and afterwards of the National Assembly. In consequence of over-exertion in this work his health began to fail in 1794 ; but, although deprived of the use of his limbs, he continued to revise the concluding volumes of his great work on Alpine physio­graphy, which were published in 1796. Latterly his mind became enfeebled, and when he was offered a chair of philosophy by the French Government in 1798 he had lapsed into a condition of partial imbecility. He died on January 22, 1799, at the age of fifty-nine, leaving two sons and a daughter.

The Alps formed the centre of Saussure’s investigations. They forced themselves on his attention as the grand key to the true theory of the earth ; but, as year by year his mass of facts assumed ever-growing dimensions, his generalizations became more guarded, until finally he came to consider a simple recording of observations as the only justifiable course. As a young man he had roamed in search of plants through many remote valleys and over the “montagnes maudits” as his unappreciative fellow- dwellers by the lakes called the snow-capped summits around them. It had been his dream, he says, since he was twenty to ascend Mont Blanc ; and he accomplished the feat on 3d August 1787. This was the second time that the ascent of that mountain, until then deemed inaccessible, was made in that year.

Saussure found among the Alps opportunity for studying geology in a manner never previously attempted. The inclination of the strata, the nature of the rocks, the fossils, and the minerals received his closest attention. He acquired a thorough knowledge **of** the chemistry of the day, watching for the brilliant series of discoveries and the improvements in processes of analysis that brought the science into such dazzling prominence during the last quarter of the eighteenth century ; and he applied all to the study **of** minerals, water, and air. Saussure’s geological observations made him a firm believer in the Neptunian theory : he regarded all rocks and minerals as deposited from aqueous solution or suspension, and in view of this he attached much importance to the study of meteorological conditions. He carried barometers and boiling-point thermometers to the summits of the highest mountains, and estimated the relative humidity of the atmosphere at different heights, its temperature, the strength of solar radiation, the composition of air and its transparency. Then, following the precipitated moisture, he investigated the temperature of the earth at all depths to which he could drive his thermometer staves, the course, conditions, and temperature of streams, rivers, glaciers, and lakes, even of the sea. He invented a great number of instruments for these purposes, tested them, and investigated the theory of their action. The most beautiful and complete of his subsidiary researches is described in the *Essai sur 1’Hygrométrie,* published in 1783. In it he records experiments made with various forms of hygrometer in all climates and at all temperatures, and supports the claims of his hair-hygrometer against all others. He invented and improved many kinds of apparatus, including the magneto­meter, the cyanometer for estimating the blueness of the sky, the diaphanometer for judging of the clearness of the atmosphere, the anemometer, and the mountain eudiometer. His modifications of the thermometer adapted that instrument to many purposes : for ascertaining the temperature of the air he used one with a fine bulb hung in the shade or whirled by a string, the latter form being converted into an evaporometer by inserting its bulb into a piece of wet sponge and making it revolve in a circle of known radius at a known rate ; for experiments on the earth and in deep water he employed large thermometers wrapped in non-conducting coatings so as to render them extremely sluggish, and capable of long retaining the temperature once they had attained it. By the use of these instruments he showed that the bottom water of deep lakes is uniformly cold at all seasons, and that the annual heat wave takes six months to penetrate to a depth of 30 feet in the earth. He recognized the immense advan­tages to meteorology of high-level observing stations, and when­ever it was practicable he arranged for simultaneous observations being made at different altitudes for as long periods as possible. It is perhaps as a geologist that Saussure worked most ; he ex­amined all the formations he met with much care and exact­ness ; and although his ideas on matters of theory were in many cases very erroneous he was instrumental in greatly advancing that science.

Saussure’s work is collected and summarized in his four large volumes of *Voyages dans les Alpes.* This book is arranged in the form of a narrative of the author’s various journeys, interspersed with accounts of the observations made and descriptions of the apparatus employed. At the end there is a long list of “agenda,” or subjects for investigation, which he anticipated would throw light on the theory of the earth. These agenda are of value as

exhibiting not only the scope and definite focussing of Saussure’s mind but his almost prophetic foresight, since subsequent scientific work has advanced in each department very nearly on the lines there laid down.

His life was written by Senebier in 1801, by Cuvier for the *Biographie Universelle,* and by Do Candolle in *Decade Philosophique,* No. xv., translated in the *Philosophical Magazine,* [i.] iv. 96.

SAUSSURE, Nicolas Théodore de (1767-1845), eldest son of Horace Benedict de Saussure, was born on October 14, 1767, at Geneva, and is known chiefly for his work on the chemistry of vegetable physiology. He was a shy man, who lived quietly and avoided society ; yet like his ancestors he was a member of the Genevan representative council, and gave much attention and thought to public affairs. He took a deep interest in the improvement of education, but deprecated the introduc­tion of science teaching into schools, on the ground that it would divert the children’s minds from the study of the classical languages and mathematics. He latterly became more of a recluse than ever, and died in April 1845.

When a young man Nicolas Theodore accompanied his father in the Alpine journeys and assisted him by the careful determination of many physical constants. He was attracted to chemistry by Lavoisier’s brilliant conceptions, but he did not become great as an originator. He took a leading share in the rapid succession of improvements which rendered the processes of ultimate organic analysis trustworthy. He fixed the composition of ethylic alcohol, ether, and some other commonly occurring substances, thereby advancing the knowledge of pure chemistry. He also studied fer­mentation, the conversion of starch into sugar, and many other processes of minor importance. The greater number of his 36 published papers deal with the chemistry and physiology of plants, the nature of soils, and the conditions of vegetable life. These were published under the title *Recherches Chimiques sur la Végéta­tion,* and were acknowledged to display remarkable ability.

SAVAGE, Richard (1697-1743), a mediocre poet and notorious literary character of the time of Pope, associated with Pope in the publication of the *Dunciad.* He had nearly reached the end of his career when Johnson went up to London, made his acquaintance, and was fascinated by his vivacity and knowledge of the world. After his death, Johnson gave his romantic history of himself in one of the most elaborate and best of the *Lives of the Poets—*a fine example of the great moralist’s searching analysis and tolerant judgment of eccentric character. Johnson apparently accepted Savage’s account of himself and his strange persecution by his alleged mother, the countess of Macclesfield, without hesitation, describing her as a “ wretch who had, without scruple, proclaimed herself an adulteress, and who had first endeavoured to starve her son, then to transport him, and afterwards to hang him.” Boswell was less credulous, made inquiries after his cautious manner in various quarters, and indi­cated pretty clearly that he considered Savage an impostor, although he could not explain why, if the unnatural story were not true, the countess could have allowed it to be put three times in print unchallenged during her lifetime (see Boswell’s *Life,* chap. v.). After Boswell, Malone and Bindley nibbled at the paradox, but it was not subjected to thorough examination till 1858, when Mr Moy Thomas discovered the original manuscript depositions in the earl of Macclesfield’s divorce suit at Doctors’ Commons, and also the proceedings in the House of Lords. The results of Mr Thomas’s researches, prosecuted with rare acuteness and industry, appeared in *Notes and Queries,* November and December 1858. To Johnson’s *Life* and these papers the reader may be referred for the strange story and the elaborate and complete exposure of its inconsistencies and improbabilities. The conclusion which Boswell hinted at, but was prevented by his rever­ence for Johnson from expressing, that Savage was an impostor, is irresistible.

SAVANNAH, a city of the United States, the capital of Chatham couuty, Georgia, and the largest city in the