round again nearly to the same place. With gun or rifle against a tree-stem, I have often been able to spot the intersection with my aim beforehand, lap by lap; the drift is to leeward.

I take it the explanation is, that in passing round *with* the wind, and by slightly falling, great impetus is gained, which is slowed down by turning to meet and rise on the wind *like a kite* (if near, this is *seen*). I have seen the albatross and gulls floating, but this case or these cases exemplify a major problem of rising as well steadily and without effort; it is also a clearer problem, the solution of which more or less solves the minor problems of mere flotation.

The line of flight is thus :—

Sapakati, Sibsagor, Asam

S. E. PEAL

Regelation

IT is stated in NATURE, vol. xxii. p. 589, that Faraday gave the name of *Regelation* to the phenomenon of two pieces of ice freezing together. Surely this is an error? It was in 1856 when Sir Joseph D. (then Dr.) Hooker, Professors Tyndall and Huxley, and the present writer were in Switzerland together. Prof. Tyndall asked us to suggest a suitable term for the process; and it was Sir Joseph Hooker who said he could think of none better than *Regelation*. Prof. Tyndall instantly accepted it as exactly conveying the meaning he required.

Agassiz, however, in writing upon the difficulties of ascertaining the temperatures of glaciers by introducing thermometers into borings, alludes amongst others to "la difficulté d'extraire les fragmens détachés qui se *regelaient* constamment" ("Études sur les Glaciers," p. 203). This shows that a similar expression had occurred to him as suitable for this phenomenon, as early as 1840, in which year his "Études" were published.

GEORGE HENSLOW

JOHANNES RUDOLF VON WAGNER

WE have already briefly alluded to the loss suffered by chemistry in the sudden death from heart-disease of Prof. von Wagner, which occurred at Würzburg, October 4. Johannes Rudolf Wagner was born February 13, 1822, at Leipzig. As a student in the university of his native city he made choice of chemistry as a profession, and supplemented the then somewhat limited advantages of the Leipzig laboratory by a course of study at Paris, whither students from numerous countries were attracted by the brilliant lectures and investigations of Dumas. His residence there was followed by a lengthy journey to the various centres of scientific interest in France, Belgium, Holland, and Germany, after which he returned in 1846 to Leipzig to accept a position as assistant in the chemical laboratory of the university. In 1851 he was appointed Extraordinary Professor of Technical Chemistry at the Nürnberg Polytechnic. In 1856 he accepted a call to the Chair of Technology at the University of Würzburg, a position which he occupied until the time of his death. During this same time he also filled two important offices, that of Director of the Technological Conservatory at Würzburg, and (until 1868) that of Royal Examiner of the establishments for Technical Instruction in Bavaria. His peculiar abilities and wide range of experience led to his being frequently sent abroad by the Bavarian Government on scientific missions, notably in 1858 to England and Holland, and in 1861 to Paris. The same reasons led to his being called upon to play an important rôle in the International Exhibitions of the past twenty years. He was successively appointed on the juries for chemical products at the Exhibitions of London (1862), Paris (1867), and Amsterdam (1869). At Vienna (1873) he was the Chief Commissioner of Bavaria,

and at Philadelphia (1876) he was a leading member of the German Commission. The marked services which he rendered in connection with the Vienna Exhibition were recognised by his sovereign, who raised him to the nobility, and decorated him with the Order of the Crown. Prof. von Wagner was the recipient likewise of numerous decorations from most of the European countries.

The career of Wagner has been one of unusual and varied activity. Apart from the multifarious duties of an executive character which we have briefly enumerated, he found time to render to pure chemistry, and especially to applied chemistry, services of incalculable value. Like Poggendorff in physics and Kopp in pure chemistry, his inclination led him towards the literary side of his favourite studies, and it is on his accomplishments as an author that his fame chiefly rests. Still, as an investigator Wagner possessed remarkable and many-sided aptitudes, and his name is associated with numerous researches, the majority of which aim at the practical application of scientific facts, or seek to ascertain the chemical nature of important industrial products. One of his first investigations (1847) was on yeast, and included a thorough study of its nature and growth, and especially of the influence exercised by the presence of foreign bodies on the phenomena of fermentation. In 1849 he commenced a research on the oil of rue, which was carried on at various intervals, and to which we owe much of our knowledge of the constituents of this important essence. In 1850 he assigned to the alkaloid cone the structure of a dibutyl-amine, a formula verified long after by Schiff's synthesis (1871) of paraconine, and by Michael and Gundelach's brilliant synthesis a few months since, of methyl-conine. Among other noteworthy theoretical results, mention may be made of his extensive monograph on polymeric isomerism (1851), and his experiments in the same year establishing the nature of mercur-ammonium compounds as substituted ammonias—mercury replacing hydrogen—by a distillation of the well-known "white precipitate" with amyl-mercaptan, which yielded sulphide of mercury and hydrochloride of amylamine. Shortly after he showed that the compounds imperatorin and peucedonine obtained from the roots of sulphur-wort and allied plants were identical, and established their chemical nature as angelate of the hydrate of peucedyle. One of Wagner's most important researches, commenced in 1850 and taken up several times since, had for an object the colouring-matters of fustic. In its course he discovered morin-tannic acid, which in company with morin gives to fustic wood its tinctorial properties. He studied carefully its reactions and its derivatives; and among the latter discovered pyrocatechin, the product of the destructive distillation of the acid. In 1853 he undertook a thorough examination of the oil of hops, separating the different chemical components, and finding amongst them quercitrin and morin-tannic acid. At this epoch he succeeded in obtaining the remarkable alloy formed by the union of four parts of potassium with 2½ parts of sodium, which is liquid at ordinary temperatures, and resembles mercury in appearance. In 1867 he contributed an interesting research on the rapid increase of solubility of carbonates in water containing carbonic acid under various pressures. At the same time he broached a theory of the formation of deposits of a graphite, in which he attributed it to a decomposition of cyanides in nature analogous to that occurring in the manufacture of soda. Among his more important analytical researches were the determinations (1860) of the quantities of oil present in the nuts and seeds of many forest trees. As an able deviser of analytical methods Wagner exhibited numerous proofs. Among these mention may be made of the use of the iodine reaction for analysing chlorides of lime (1859), the use of iodine likewise for the determination of the alkaloids (1861), the volumetric deter-