dilution, and (2) that there is a parallelism between the 'strength' of an acid and its electrical conductivity. The conception of the 'activity coefficient' as a 'degree of ionisation' came later, and was not published until Arrhenius had become acquainted with van 't Hoff's memoir on the extension of the gas laws to solutions. The abnormal behaviour of dissolved salts, expressed by the van 't Hoff factor i in the equation $pv = iRT$, was precisely the point on which Arrhenius fastened as of special significance for his theory of dissociation. He writes from Würzburg to van 't Hoff under date March 30, 1887: "Die Abhandlung [*i.e.* van 't Hoff's memoir] hat mir nämlich in unerhörtem Grade Klarheit geschafft uber die Konstitution der Lösungen," and he proceeds to the correlation of osmotic abnormality and ionisation. This correlation was the main feature of the communications made by Arrhenius in 1887 to the Swedish Academy, and of the classical paper "Über die Dissociation der in Wasser gelösten Stoffe," published in the *Zeitschrift für physikalische Chemie*. An early announcement of these new developments was made also to Sir Oliver Lodge as secretary of the British Association Committee on Electrolysis.

It was fortunate for the propagation of Arrhenius's ideas that he was in alliance with van 't Hoff, and that he had such an able and enthusiastic advocate as Ostwald. The newly established *Zeitschrift für physikalische Chemie*, run mainly by Ostwald, provided an effective platform for the discussion of the new theory and the relevant experimental investigations. Arrhenius's views evoked strong opposition in many quarters, but as the years passed the utility of this theory as a basis for the study of solutions *on quantitative lines* became more and more apparent. The theory stimulated a prodigious amount of research, and if modifications have been made and are still being made, the ideas of Arrhenius have nevertheless yielded an abundant harvest.

In the experimental investigation of problems suggested by the new views on solution Arrhenius himself, as well as his co-workers in the Nobel Institute, took a prominent part. Such matters as the diffusion of electrolytes, neutral salt action, the hydrolysis of salts, the catalytic activity of acids, isohydric solutions, were examined from the viewpoint of electrolytic dissociation, and the extent determined to which the new theory was capable of giving a quantitative account of each case.

The study of physiological and biological problems on quantitative physico-chemical lines was another field in which Arrhenius was active, both theoretically and experimentally. He concerned himself more especially with serum therapy, and many of his original papers and books deal with aspects of this subject, such as the relation of toxins and anti-toxins.

From serum therapy to cosmogony seems a long step, but the latter also was a subject in which Arrhenius was deeply interested, and the varied problems of which occupied much of his thoughts. The nature of planetary atmospheres, the genesis of the solar system, the origin of the aurora, the influence of carbon dioxide on the temperature of the earth, the function of light pressure, and the periodicity of certain natural phenomena were among the problems on which Arrhenius expressed fresh and original views.

The contributions of Arrhenius to serum therapy and to cosmogony were both striking and important, but without doubt the honourable and permanent place which his name occupies in the roll of men of science is due, not to his work in these two fields, but to the fresh impetus given by him to the study of solutions on quantitative lines. J. C. P.

THE RIGHT HON. THE EARL OF IVEAGH, F.R.S.

THE Earl of Iveagh, who died on Oct. 7 in his eightieth year, distributed large sums for public objects. Consideration for the sufferings of others was one of his noblest characteristics, and his contributions to hospitals in Dublin and elsewhere were on a princely scale. When the Boer War broke out, he equipped the Irish Field Hospital, and during the Great War he spent vast sums in increasing the provision for our sick and wounded. Lord Iveagh was, however, a philanthropist embued with a spirit of social reform. The urgent appeal of sickness and suffering is responded to by many according to their means, but other of Lord Iveagh's repeated acts of benevolence indicate a considered scheme to increase the well-being by improving the health of the people.

In 1889, Lord Iveagh gave £250,000 for the substitution of sanitary dwellings for slums in Dublin and London. Nine years later he provided a similar sum to improve a congested and noisome area abutting on St. Patrick's Cathedral, Dublin. By this scheme the old dwellings and streets were done away with and a public garden of about two acres was provided around the Cathedral. Upon the rest of the seven and a half acres model dwellings for working people were erected, with a central play-hall for the children.

Prior to 1907 the congested state of the old markets in Dublin and the surrounding areas was not only an eyesore but also a serious menace to the public health. At this date Lord Iveagh bought up the whole area, built modern markets, and presented this valuable property to the city. He was, indeed, a practical hygienist, for there is no better means of improving the health of an urban population than providing it with good housing and opportunities to spend more time in the open air and sunlight. One of the latest of Lord Iveagh's benefactions was destined to increase the facilities for recreation in the open air of the citizens of London. In 1925 he purchased the residue of the Ken Wood property adjoining Hampstead Heath, which the Preservation Committee had been unable to acquire owing to exhaustion of its resources. The whole of this fine place of woodland now becomes public property.

The idea of furthering the public health by stimu-

lating medical discovery seems to have originated in 1896 owing to an accident to one of Lord Iveagh's employees. A labourer upon his estate having been bitten by a rabid dog, he directed that everything possible was to be done for the unfortunate man, but was surprised to learn that the treatment for hydrophobia could only be secured by sending the patient to Paris. This was done, and no further ill results ensued; but the novelty of the treatment and the absence of facilities in England for the prosecution of researches such as had led to Pasteur's fruitful discovery made a deep impression on his mind. In 1898, Lord Iveagh visited the Pasteur Institute, and the project of endowing a similar institute in London began to take shape. Ascertaining that the Lister Institute (then the Jenner Institute) had been founded with the objects he had in view but was languishing for want of funds, he decided, after careful inquiry, to endow the Institute to the extent of £250,000, subject to certain alterations in its constitution and government.

Another institute for medical research, as well as the treatment of patients, which is largely indebted to Lord Iveagh's liberality, is the Radium Institute in Riding House Street, London. This was founded in 1909 to make researches upon the effect of radium on the human organism and to supply treatment to patients whose circumstances did not permit them to receive the benefit of radium treatment without financial help. The whole of the money required for the building, equipment, and endowment of the Radium institute was provided by Lord Iveagh and the late Sir Ernest Cassel.

Lord Iveagh made large benefactions for various purposes to his old college, Trinity College, Dublin, and built for it new Institutes for physics and botany, and endowed the school of geology. The new National University of Ireland also is indebted to him for a valuable site at St. Stephen's Green.

Even a complete list of Lord Iveagh's known gifts for public purposes would fail to record many of the benefits he dispensed. Partly from a distaste for notoriety, partly for self-protection, the hand of the donor was concealed. His philanthropic enterprises were carefully considered and evolved with patience and attention to details. He took a personal interest in all his schemes and often a large part in the direction of them.

In 1906, Lord Iveagh was elected a Fellow of the Royal Society under Statute 12 "as having rendered conspicuous service to the cause of science," and in 1908 he was unanimously elected chancellor of the University of Dublin.

WE regret to announce the following deaths:

Dr. Charles C. Godfrey, president of the American Association of Variable Star Observers, conducted in co-operation with the Harvard Observatory, on Aug. 31, aged seventy-one years.

Dr. B. Daydon Jackson, secretary of the Linnean Society of London for forty-seven years, editor of the "Index Kewensis," and author of other important botanical works, on Oct. 12, in his eighty-second year.

Dr. William Libbey, professor of physical geography and Director of the Museum of Geology, Princeton University, from 1883 until 1923, on Sept. 6, aged seventy-two years.

Prof. Alexander Mair, professor of philosophy in the University of Liverpool, president in 1925 of the Association of University Teachers, and author of "Philosophy and Reality" (1911), on Oct. 8, aged fifty-seven years.

Dr. J. W. Mollison, C.S.I., formerly Inspector-General of Agriculture in India, who was the first head of the Imperial Agricultural Research Institute at Pusa, on Oct. 4, aged seventy years.

Dr. Eugene Allen Smith, emeritus professor of mineralogy and geology in the University of Alabama and state geologist since 1873, who was vice-president (Section E) of the American Association for the Advancement of Science in 1904, on Sept. 7, aged eighty-five years.

Mr. H. M. Taylor, F.R.S., senior fellow and formerly mathematical lecturer of Trinity College, Cambridge, distinguished by his contributions to mathematical science and his translation of many scientific works into Braille for use by the blind, on Oct. 16, at eighty-five years of age.

News and Views.

THE amount of change a story can undergo through repeated copying is a commonplace of experimental psychology; and every scientific worker in the habit of verifying original references has met with examples where the actual statements of an early investigator differ substantially from the versions of them to be found in more recent writings. But it is not often that one meets so extreme a case as that given by Mr. Gheury de Bray in a letter to NATURE of Sept. 17, and in an article in the present issue. Of eleven determinations of the velocity of light quoted in standard works, only one turned out to have been quoted correctly. Mr. de Bray's historical work should provide material for any one in need of examples for the precept 'Verify your references.'

IN a paper in the *Astronomische Nachrichten* (No. 5520), Mr. de Bray has used what appear to be the best of the determinations, after due criticism, and has shown that they point to a decrease in the velocity of light of about 200 km./sec. in the last fifty years. As he says, however, the earlier determinations are not good enough individually to determine such a change, and his argument rests on the fact that they all agree in suggesting a change in the same direction. Of the seven determinations retained, one differs from 299,800 km./sec. by 2·2 times its probable error, one by 2·0 times, and the rest by smaller multiples. In a random set of observations 1 in 5 would deviate from the true value by more than twice the probable error. The velocity of light being so fundamental a constant, physicists may prefer to attribute any change in its measure, if established, to a change in the unit of velocity and not to one in the velocity of light itself. The variation of the second is shown by E. W. Brown's recent work to be within a few parts in 10^7. The possibility of measurement of wave-lengths within a few thousandths of an