Universal Decimal Classification.

THE fifth report of the International Committee on the Decimal Classification was presented by F. Donker Duyvis to the Tenth Conference of the Institut international de Bibliographie at the Hague on Aug. 25–29, and indicates the growing value and increasing use of the Universal Decimal Classification in the interchange of technical and scientific information. A translation of the chapter on electrotechnics has now appeared in Germany, and an extensive abridged manual of the classification is in preparation under the leadership of Dr. Günther. Further translations and expansions in progress in Germany were reported on by Herr C. Walther, the main interest being directed to the technical sciences, whereas in Great Britain progress has been mainly with the pure sciences, medical sciences, and agriculture. This lack of progress, as indicated by Mr. B. M. Headicar in a paper describing the construction of the "London Bibliography of the Social Sciences", is largely due to the absence of an English translation. Nevertheless, in meteorology, plant genetics, agriculture, and general biology, progress has been made, and Dr. J. G. Priestley in reviewing the position of bibliography in physiology indicated the value of the decimal system in constructing the complete card index of physiological and allied subjects which is a fundamental need. As a first step, *Physiological Abstracts* has already commenced to reprint decimal numbers from original papers in which they are used.

Many of the papers presented at the Conference afforded further evidence of the wide use of the decimal classification and the efforts being made to improve and extend the system by international co-operation. Its value in the organisation and documentation required for the *Révue générale de l'Électricité* was described by E. Beinet. O. Frank and C. Walther reviewed German developments in further detail, in which country it has been adopted by the German National Committee for the power and fuel bulletin initiated by the World Power Conference, and important libraries such as those of the Technical High School, Aachen, the I. G. Farbenindustrie A.-G, Leverkusen, the Central Technical Library, Frankfurt, the German Industrial Safety Museum, Berlin, the German Patent Office, and the Berufsgenossenschaft der Chemische Industrie, etc., while a full account of its use by the A.G. vormals Skodawerke in Pilsen was contributed by F. Kondelak.

In a report on "Documentation in Medicine" presented by Dr. Rene Sand, secretary of the League of Red Cross Societies, adoption of the decimal classification as a means of expediting the much-needed international co-operation in the organisation of documentation and bibliography in medicine was strongly urged, and the application of the decimal classification in the aluminium industry was discussed in a report presented by the S. A. pour l'Industrie de l'Aluminium à Neuheusen. A paper by J. Cenek described its use in industry in Czechoslovakia, and difficulties encountered by Polish engineers in adopting the system were described in a further paper from the Bibliographical Section of the Society of Polish Technicians, Varsovie. Other papers dealing with the decimal classification included J. Gevers' review of thirty years' experience with the system in the Belgian Patent Office, the application of the decimal system in local administration and social problems, and in public administration archives (L. Wouters), while G. A. A. de Voogd, chief of the Organisation Department of Bataafsche Petroleum Maatschappig, in a paper on rationalisation in documentary administration, described the extension of the decimal classification to meet the stringent demands of scientific management in the head office of a world-wide organisation.

Other papers presented at the Conference included one by Dr. M. Pflücke, principal editor of the *Chemisches Zentralblatt*, describing the organisation of abstracting and indexing of the *Chemisches Zentralblatt*, co-operation between libraries (J. W. Pafford), the standardisation of sizes (Frank), the use of addressographing machines with the decimal classification (W. Schümeyer), and international abstracting and indexing of scientific literature (Sir Frederic Nathan), and reports on the progress of the *Repertorium Technicum*, the *Index Bibliographicus*, and the Commission on Cataloguing Rules.

The Behaviour of Electrolytes in Solution.

A DISCUSSION on the influence of the medium on the properties of electrolytes initiated by Sir Harold Hartley on Sept. 24, in Section B (Chemistry) of the British Association during its centenary meeting in London, gained further interest from the presence of several distinguished foreign men of science whose investigations have largely contributed to recent developments in this field. Striking success has attended the application to dilute solutions of the Bjerrum hypothesis of complete ionisation. With the Debye treatment of the interionic forces, this has induced the extended study of other solvents with the object of testing the validity of the theory.

In the discussion, Prof. P. Debye described the results of experiments to determine the effect of alterations in frequency on the electrical conductivity of solutions in different solvents. This effect is due to the finite time (of the order of 10^{-7} sec.) which is required for the formation of an ionic atmosphere round an ion, and at very high frequencies or in very viscous media marked increases in conductivity can be obtained. For example, with a solution of calcium ferrocyanide in a mixture of 96 per cent glycerol and 4 per cent water, the conductivity is increased 500 per cent when a frequency of 10^4 cycles is employed. No values are obtained for the equivalent conductivity which are greater than the limiting value for infinite dilution, and this, according to Prof. Debye, implies that interionic forces are mainly operative.

Profs. N. J. Bjerrum and J. N. Brönsted discussed the solubilities of salts in different solvents and the agreement between experimental data and calculations based on Born's formula. Prof. Bjerrum, dealing with the forces between ions and solvent molecules in relation to the solubility of electrolytes, considers that the agreement is as good as can be expected on the basic assumptions made.

Evidence of the existence of strong specific forces between the ions and the solvent molecules was advanced by Sir Harold Hartley from the conductivity of salts in different solvents and by Prof. J. C. Philip from a comparative study of the nitriles as solvents. While in water and to a lesser degree in the alcohols simple univalent salts conform fairly closely with the requirements of the Debye-Onsager equation, in non-hydroxylic solvents, for example, acetone, nitrometh-

ane, and the nitriles, there are marked divergencies, which can most readily be interpreted by the assumption that the ions carry with them sheaths of solvent molecules. Dr. J. A. V. Butler has reached a similar conclusion from a study of the behaviour of electrolytes in mixed solvents, for example, alcohol-water mixtures, and showed that by the comparison of different properties conclusions can be drawn as to the nature of the molecules in contact with the ions. Dr. E. A. Guggenheim showed that this experimental evidence of ionic solvation is in agreement with theoretical requirements. Thus the dissociation constant of sodium chloride calculated by the methods of statistical mechanics is too small to account for the apparently complete dissociation of the salt in solution. If, however, hydration of the ions be postulated, a plausible value is obtained for the dissociation constant.

University and Educational Intelligence.

OXFORD.—In his speech on the conclusion of his second year of office, the vice-chancellor (Dr. Homes Dudden, Master of Pembroke) explained why no election has yet been made to the vacant Savilian chair of astronomy. This, he said, is due to the fact that the whole problem of the future of astronomy in Oxford has been under review. A detailed scheme has now been prepared, which includes the construction of a new and thoroughly equipped observatory on a suitable site near Oxford; the representation of both positional astronomy and astrophysics on the professional staff; and an extension of facilities, in close connexion with the new observatory, for the teaching and study of meteorology and geophysics. The completion of the scheme is waiting for the provision of the necessary funds.

THE University of Berne has conferred doctorates *honoris causa* on Sir Charles Sherrington, Waynflete professor of physiology in the University of Oxford, and Prof. Harvey Cushing, professor of surgery in Harvard University.

A SPECIAL course of lectures on "Some Applications of Biochemistry to Modern Pharmaceutical Problems" will be given by Messrs. Frank Wokes and F. J. Dyer, in the Lecture Theatre of the Pharmaceutical Society of Great Britain, 17 Bloomsbury Square, on Oct. 22 and succeeding Thursdays, at 5.30 P.M. Admission to the first lecture is free without ticket. The subject will be "Physical and Chemical Conditions Necessary for Life".

THE council of University College, Southampton, has appointed to the chair of engineering Wing Commander T. R. Cave-Browne-Cave, who was responsible for the machinery installation of the *R101*. Mr. H. Leech, who, with Wing Commander Cave, made every trial flight in the *R101*, and was lately foreman of the Engine Department at the Royal Airship Works, has been appointed experimental engineer.

EDUCATION in India cost in 1929, the latest year for which statistics have been published, 270 million rupees, of which nearly two-thirds was provided by government and local authorities. This expenditure has been frequently criticised, on the ground that it maintains a system of education appropriate enough for the small minority of pupils destined for employment in government and private offices and the learned professions, but quite unsuitable for the needs of the general population, which is mainly rural. In a pamphlet entitled "The Indian Education Problem: a Solution", Mr. J. C. Ghosh, principal of the School of Chemical Technology, Calcutta, sketches an alternative system designed to divert a due proportion of educational effort into channels tending to improvement of agricultural and manufacturing industries and the public health. In the forefront of his suggestions is a plan for rural education on practical lines by teachers who would be maintained by the well-to-do villagers in rotation, "according to traditional custom and hospitality". In urban areas, boys and girls would start their education at home in conjunction with manual labour "in ancestral or family occupation", municipal and other free primary schools being maintained only for the children of parents too poor to undertake this home training. All pupils up to fourteen years of age would be scouts, and their efficiency in scouting, literacy, manual and physical training would be tested in camps of exercise, the existing expensive system of formal inspections being abolished. Literary education in secondary schools and universities would be ordinarily restricted to the rich and to exceptionally gifted boys and girls.

Birthdays and Research Centres.

Oct. 20, 1862.—Prof. THOMAS H. BRYCE, F.R.S., regius professor of anatomy in the University of Glasgow.

The chief investigations in progress in my laboratory are: first, it is impossible in some cases to reach decisive interpretations—by ordinary methods of investigation—of the appearances seen in serial sections of the free mammalian blastocyst just before implantation. A special technique is therefore being developed by Dr. Maclaren for the observation of the living blastocyst and for recording the results. Some success has already been obtained. Second, it was discovered by Dr. Nicol that in the intravitam staining of the tissues by trypan blue, the uterine mucosa (in *Cavia*) at certain stages was densely stained, due to the accumulation of certain cells packed with blue granules. This has been followed up, suggestive results are being obtained, and an interesting line of research is opened.

Oct. 20, 1891.—Dr. JAMES CHADWICK, F.R.S., fellow of Gonville and Caius College, and assistant director of radioactive research, Cavendish Laboratory, Cambridge.

I am studying, with the help of collaborators, the effects of bombarding elements by α-particles, in particular, the emission of protons and γ-radiations from the atomic nuclei and the scattering of the α-particles. The wave mechanics has given a clearer view of these problems, and the application of new experimental methods is giving new and detailed information. I hope that in a short time we shall be able to describe completely the interaction between an α-particle and an atomic nucleus, and have a reasonable picture of the structure of the nuclei of some elements.

Oct. 22, 1876.—Prof. HAROLD HILTON, professor of mathematics, Bedford College, University of London.

At the request of the Clarendon Press, I have been engaged lately in the preparation of a second edition of my book on "Plane Algebraic Curves". Time not absorbed by this task and the duties of my professorial work is mainly devoted to the study of problems in affine and projective differential geometry.