Societies and Academies.

SHEFFIELD.

Society of Glass Technology, October 20.—J. W. **French**: Glass annealing. In any discussion of annealing the first question is the rate at which heat is dissipated by glass at the various temperatures of the annealing process. The other conditions determining the magnitude of the stresses that may be established in glass during the cooling process are: (2) The thermal expansion in contraction of the material; (3) thermal conductivity; (4) cohesion of the material; (5) the viscosity of glass; (6) the existence of a surface layer having properties different from those of the underlying material; (7) homogeneity of the glass; and (8) the form and dimensions of the glass. From the optical glass point of view, annealing means—(1) the raising of the temperature to a point just above that of the softening point of the hardest glass in the charge, and (2) the cooling of the plant at a rate which will not at any one point be sufficient to reintroduce stresses in any of the glasses.—E. A. **Coad-Pryor**: The economics of the annealing process. An account was given of experiments on which the Engineering Department and the Research Laboratories of the United Glass Bottle Manufacturers, Ltd., had been recently engaged at Charlton. In order to get the information on which to design a lehr on a sound theoretical basis, it was necessary to know the amount of heat taken into the lehr by the bottles and the heat lost through the lehr walls. Eventually heat was supplied to the lehr by means of the slats of the conveyer. During most of the period of testing, the lehr was running at about one-third of its maximum speed. The annealing was good throughout. When it was speeded up to its maximum rate, about 10 inches a minute, the annealing remained excellent, even on quart bottles. This speed represented an output of 450 gross of quarts per day, or about 40 tons of glass. The lehr was fitted with a number of curtains to restrict draught up the tunnel. Once the curtains were adjusted to the correct setting, no further adjustments were required.—F. A. **Hurlbut**: A suggested improvement in the design of lehr conveyer.—E. **Meigh**: A new type of "fireless" lehr.

PARIS.

Academy of Sciences, September 27.—Henri **Jumelle**: Ravenea, Madagascar palm trees. There are seven species of Ravenea in Madagascar, of which detailed descriptions are given.—Jacques **Chapelon**: The emptying of a reservoir.—H. **Pécheux**: Researches on the dielectric constants of petrols and paraffins. Determinations of the dielectric capacity and its temperature coefficient for nine hydrocarbons ranging from petroleum spirit (density 0·655) to hard paraffin wax.—A. **Travers** and **Malaprade**: The constitution of the molybdates. The acid molybdates can be interpreted as being derived from two ions only, the tetramolybdic ion ($4MoO_3.O$) and the normal ion (MoO_4).

October 4.—A. **Desgrez**, L. **Lescœur**, and Mlle. S. **Manjean**: The influence of a current of inert gas on the decomposition of sulphide solutions. Application to mineral waters. Studies on the rate of removal of hydrogen sulphide by hydrogen from solutions of the gas alone, of sodium hydrogen sulphide, and of sodium sulphide, and of mixtures of these. The results find an application in the analysis of mineral waters containing sulphides.—Léon **Guillet**: The influence on the mechanical properties of copper and aluminium alloys of reduction of section produced by forging at a high temperature.—Maurice **Gevrey**: Certain properties of harmonic functions and their extension to the solution of linear partial differential equations.—Pierre **Humbert**: The equation of the prepotential plane.—Paul **Urysohn**: An example of an integral function taking on its circle of convergence an *ensemble* of non-measurable *B* values.—N. **Gunther**: An application of the universal functions of A. Korn.—A. S. **Besicovitch**: The fundamental geometrical properties of plane *ensembles* of linearly measurable points.—Alfred **Rosenblatt**: Certain irrotational movements of viscous liquids.—R. **Forrer**: The structure of the atomic magnet. The rotation and reversal of the multiplet.—**Verney**: An apparatus for the automatic control of furnaces. A description of an electrical apparatus by means of which a furnace can be made to follow any desired time-temperature curve.—Pierre **Bedos**: Some new reactions of the oxide of cyclohexene. Alkyl iodides react with cyclohexene oxide in sealed tubes at high temperatures (150°-190° C.), giving the addition compound, alkoxy-2-iodo-1-cyclohexane. A similar reaction is given by the acyl chlorides and bromides, esters of the orthochlor (brom) cyclohexanol being formed.—J. **Orcel**: The thermal analysis of the chlorites.—Mlle. Marcelle **Philibert**: The opening of a special effusive *bouche* in the crater of Vesuvius.—Henri **Leenhardt**: Placosaurus.—Mme. Anna **Drzewina** and Georges **Bohn**: The antagonistic action of metallic silver and tin on living beings. The destructive action of metallic silver on Convoluta is reduced by the presence of metallic tin.—E. **Aubel**: Methylglyoxal considered as an intermediary in the course of the degradation of glucose by micro-organisms.—Constant **Mathis**: The virulence to man of the Spirochæte of the shrew mouse.—Auguste **Lumière** and Mme. J. **Enselme**: The suppression of anaphylactic shock by anæsthesia of the endo-vascular nerve terminations.—Charles **Lebailly**: Experiments on the virus of foot-and-mouth disease.

ROME.

Royal Academy of the Lincei.—Communications received during the vacation.—Gino **Fano**: Variety of binary forms of the seventh order.—Guido **Fubini**: Projective properties of surfaces of constant metric curvature.—Ferruccio **Zambonini** and Guido **Carobbi**: Presence of sodium and potassium fluosilicates among the products of the present-day activity of Vesuvius. In addition to ammonium silicofluoride, which occurs as cryptoalite, as a product of fumarolic activity on Vesuvius, and to the potassium salt, found as hieratite on both Vesuvius and the Island of Vulcano, malladrite, which is sodium silicofluoride, has now been detected on Vesuvius. Indications of the presence of further silicofluorides among the products of Vesuvian fumaroles have been obtained.—Ferruccio **Zambonini** and Silvia **Restaino**: Cerous-thallous sulphates. Investigation of the system, cerous sulphate—thallous sulphate—water demonstrates the existence of a third double sulphate, $Ce_2(SO_4)_3$, $4·5\ Tl_2SO_4$, hitherto unknown.—Luigi **Rolla** and Lorenzo **Fernandes**: The element of atomic number 61. Fractional crystallisation of the double salts formed with thallous sulphate by the sulphates obtained from commercial didymium oxide leads to fractions which, by study of their X-ray absorption spectra, are shown to contain the element of atomic number 61.—Giuseppe de **Lorenzo**: The *Elephas antiquus* of Pignataro Interamna in the valley of the Liri.—B. **Longo**: First results of the seeding of the 'flowerless' apple (*Pyrus apetala*, Munchh.).—Arnaldo **Masotti**: Uniform rotation of a pair of thin round cylinders in an indefinite perfect liquid.—Ubaldo **Barbieri**: Astronomical determination of latitude and azimuth made at Monte Settepani

in 1911.—Maria Luigia **Pagliarulo**: Rotatory and refractive dispersion of aqueous solutions of dextrorotatory tartaric acid. The curves of refractive dispersion for tartaric acid solutions appear perfectly normal, but the derived curves similar to those previously employed with asparagine solutions exhibit a change of direction corresponding almost exactly with the maximum of the rotatory dispersion curves.—G. **Scagliarini**: Analogy of behaviour and isomorphism between cerium and thorium. The behaviour of the mixed oxides of the rare earth metals does not support the hypothesis that, in such oxides, ceric oxide forms part of a saline oxide. It is hence probable that the cerium is present in a condition of amorphous solid solution and that its solubility in acids depends on its condition of extreme subdivision. It may be, however, that when dissolved in other oxides, ceric oxide does not undergo that process of polymerisation which renders it insoluble when it is calcined either alone or in homogeneous mixture with other oxides. The same holds in the case of thorium dioxide. Further, in agreement with the positions of the two metals in the periodic system, the acetylacetonates of thorium and cerium are completely isomorphous.—G. **Scagliarini** and M. **Monti**: Additive compounds of halides of tin and titanium with organic bases (ii.). Stannic and titanic halides form additive compounds with hexamethylenetetramine together with one or more molecules of a solvent such as chloroform, bromoform, dichloroethylene, tetrachloroethane, etc. The composition of the complex compound obtained varies with the concentrations of the metallic halide and organic base in the solvent, and the colour of the product is usually deeper when the halide or the solvent preponderates over the base. Werner's theory does not furnish a satisfactory interpretation of these compounds.—Luigi **Mazza**: Products formed during the working of lead accumulators. Examination by means of the Debye-Hull method shows that the products formed during the charging and discharging of lead accumulators include lead, both in powder and in masses, lead sulphate, lead dioxide, various mixtures of these compounds, and other substances.—G. **Resegotti**: Crystallographic study of certain aromatic nitroderivatives. 5-Methyl-2:6-dinitromethylhydrazobenzene crystallises in the prismatic class of the monoclinic system: $a:b:c=1\cdot27507:1:1\cdot37644$, $\beta=93^\circ\ 30'\ 30''$; 5-methyl-2:4-dinitromethylhydrazobenzene: $a:b:c=0\cdot81915:1:0\cdot96209$, $\beta=93^\circ\ 37'$ and α-methyl-α-phenyl-2:4-dinitro-5-chlorophenylhydrazine: $a:b:c=2\cdot8747:1:1\cdot4563$, $\beta=128^\circ\ 3'$, also crystallise in the prismatic class of the monoclinic system.—M. **Sella**: Further facts relating to the migration of the tunny, ascertained by means of fish-hooks.—Antonino **Pais**: Influence of a hormonic stimulus, directed towards the testicles and ovaries, on the characters of the descendants.

WASHINGTON, D.C.

National Academy of Sciences (Proc., vol. 12, No. 9, September).—G. A. **Miller**: Postulates in the history of science. Such postulates might make for progress. Postulate (*a*): in a modern work on the history of science, technical terms should be given only their modern meanings. Then the numbers which Napier first called logarithms are not logarithms in the modern sense, but serve some of the purposes of modern logarithms and were influential in their development. Postulate (*b*): a scientific concept must be clearly understood before its history can be presented satisfactorily.—H. J. **Ettlinger**: On the zeros of functions associated with a linear system of the second order.—Harry Merrill **Gehman**: Concerning irreducibly connected sets and irreducible continua.—Karl T. **Compton**: Interpretation of deviations from Ohm's law. Bridgman has recorded small deviations from Ohm's law when currents of the order of 10^6 amp. per cm.^{2} traverse gold or silver films. Applying Thomson's doublet theory of conduction leads to improbable values for the magnitude of the atomic doublet. The experimental evidence is, however, consistent with the classical free electron theory.—R. C. **Gibbs** and H. E. **White**: Rubidium- and cæsium-like doublets of stripped atoms. Extrapolation of data available made possible the identification of various doublets of ionised rubidium, strontium, yttrium, zirconium, and cæsium, barium, lanthanum, cerium, præseodymium. They are relatively intense lines in the spark spectrum.—Walter A. **MacNair**: The fine structure of certain lines and energy levels of cadmium. Two different quartz Lummer-Gehrcke plates crossed with a quartz prism or grating spectrograph and a water-cooled cadmium arc were used.—F. A. **Saunders**: On the spectrum of argon.—A. Keith **Brewer**: Ionisation in reacting gases. The change of rate of thermionic emission and of chemical action with temperature follows the same general law. The rate and temperature of emission in certain oxidations are interdependent; above a certain point, a difference in the temperature and rate of emission of oppositely charged ions occurs. This suggests a selective force of the metallic surface.—Herbert W. **Rand** and Amy **Browne**: Inhibition of regeneration in planarians by grafting: technique of grafting. Two planarians are narcotised with chloretone. A piece of tissue is excised from one, the lateral nerve cord being severed. The animal is placed on an acid-free gelatin strip made by pouring the hot solution on to a glass slide and cooling The head is then removed from the other individual, immediately inserted at the wound in the first animal and kept in position by strips of gelatin. After the graft had become established, the head of the stock was removed. Regeneration of the head or the stock would occur in a normal worm, but the presence of the graft sometimes inhibits it.—H. W. **Rand**, J. F. **Bovard** and D. E. **Minnich**: Localisation of formative agencies in Hydra. A double-headed animal is produced by grafting a new head on to the side of the stock and the stock head is then removed. Sometimes regeneration of the stock head occurs; otherwise the stump remaining is absorbed. A headless graft does not inhibit regeneration.—H. W. **Rand** and Mildred **Ellis**: Inhibition of regeneration in two-headed or two-tailed planarians. Animals with duplicated head or tail were produced by splitting a portion of one worm longitudinally. Removing one head or one tail led in some experiments to regeneration of the lost member, but in other cases the 'dominance' of the remaining head or tail inhibited regeneration.

VIENNA.

Academy of Sciences, July 8.—K. **Fritsch**: Contributions to our knowledge of the Gesneriaceæ—(ii.) The American species of the genus Klugia.—V. **Cordier**: The action of bromine on urea and guanidine derivatives.—H. **Müller**: Attempts to find radioactive products of the atomic disintegration by α-rays.—M. **Blau** and E. **Rona**: Ionisation by H-rays.—R. L. **Hasche**: The method of counting scintillations.—E. **Lieben** and D. **Laszlo**: The relation of creatin to albumin and carbohydrate metabolism.—J. **Pollak** and E. **Gebauer-Fülnegg**: New *o*-azo compounds.—K. **Ohara**: The use of ash for the determination of woods.—J. **Koller**: A new synthesis of conine. The synthesis of *p*-meth-oxyephedrine and of *m*-methoxy-*p*-oxyephedrine.—G. **Sachs** and M. **Ott**: Notes on the preparation and analysis of some products of methylation of thiosalicylic acid.