Early Science at Oxford.

December 14, 1683. The peice of Iron which had been cast into an Ingot, lying North and South, was produced. We did not observe that it did in ye least draw ye needle. A letter from Mr. Aston gave an account that *Gerbertus* brought ye use of numeral figures into these parts of the world; it was ordered that enquiry should be made whence this appears. A letter from Dr. Tyson related to ye observations, lately made by Dr. Bagly on ye *Lumbricus latus*, with an account, and draught, of a little Insect, which he found in ye *Trachæa* of ye *rana Piscatrix*. Dr. Smith was pleased to oblidge us, with an account of some observations, made by ye learned Mr. Greaves, in Ægypt, and transcribed from his MS, by ye Doctor, to whom it was communicated by Mr. Stubbs, formerly of Wadham Colledge.

1686. The Minutes of ye Royal Society were read, which gave an account of some cubical *Stones* of a substance resembling a Marchasite. Dr. Plot tells us they are ye Ludus of Van Helmont, and that he has great variety of them by him, which have been found in Staffordshire, Pembrokshire, Merionyidhshire, and Carnarvonshire; and that in his History of Staffordshire he has mentioned them.

An account communicated by Mr. Caswell, how and in what proportion the Quicksilver may stand at different heights, reckoned on ye plates of different *Baroscopes*, though filled in ye same place, and with quicksilver equally free from air.

Some Observations of ye *weather* in ye hottest week of ye last summer 1686 made joyntly with ye Baroscope and Thermoscope at several hours of the day, in order to find how much heat affects ye Baroscope. By Mr. Caswell.

A peice of *Tin-ore* usually called Shoad found above-ground, and native copper as found in the West of Cornwall, were communicated by Dr. Plot.

December 15, 1685. A Letter from Mr. Molyneux concerning ye circulation of the blood as seen in the Lacerta Aquatica was communicated and read.

A Letter of Mr. Flamsteed's concerning ye eclipses of Jupiter's satellits in ye year 1686 was read.

Mr. LLoyd communicated some stones like ye *Lapides Judiaci*, and others like Shell-fish, which were gathered in this County.

A Paper of Mr. Bayly's containing an account of the application of a needle to a piece of iron held perpendicular, made by one in a voyage crossing ye line was read.

December 16, 1684. Our President, and Director, being now returned home, we had a full meeting, in which was read Sir William Petty's Catalogue of Experiments. Dr. Plott was pleased to shew us a piece of cloth, which he brought from London, woven and made with ye flax of ye Amianthus, or Asbestus-stone; which before Mr. Vice-chancellor, and some other Doctors of the University (who were then pleased to honour us with their presence) was heat for some considerable time red-hot, with no other alteration, after it was cold again, save only it appeared somewhat whiter, and cleaner, than before; and was, whilst hot, more brittle; but being cold, of ye same strength, and toughness, as before calcination; which it had now undergone 5 or 6 times; contrary to our Paper made of ye Anglessey-Asbestus, which, being of a shorter thread, was at ye first of a contexture not so tough and strong, as ye cloth, and after ye fire is so friable and brittle, as not to endure any bending, nor ye very handling, if any thing roughly: this paper, it was thought, might be made much finer, and whiter, if it could be made also tough, and tenacious for any use.

Societies and Academies.

LONDON.

Royal Society, December 3.—W. A. **Bone** and G. W. **Andrew**: Studies in catalytic combustion. Pt. ii. The union of carbon monoxide and oxygen in contact with nickel, copper, and other oxides. With nickel gauze at 365° C., the formation of a highly reactive Ni-CO (or possibly O-Ni-CO) complex in the surface layer may become a prime factor in the catalytic combustion. The action of the metal may really be of a dual character, involving (*a*) the "activation" by the metal of the two gases marked by a comparatively low rate of carbon dioxide formation, and (*b*) the intermediate formation of still more reactive CO-Ni-O complexes. With copper gauze at 135° and 250° C., for the real "catalytic" reaction, no prior formation of either copper oxide or any Cu-CO complex was required, but only the "occlusion" of the respective gases. With granular nickel oxide at 150° C., and granular copper oxide at 165° to 175° C., respectively, the catalytic action depends upon the formation at the surface of an "activated" oxygen film probably of more than monomolecular thickness. The real catalytic combination of carbon monoxide and oxygen over all these surfaces is independent of either the oxidation of a primarily formed "carbonyl" film or the reduction of a metallic oxide.—F. H. **Constable**: Immobile groups of atoms with strong specific external fields as the cause of catalytic activity. Copper surfaces made by electrolytic deposition, reduction of alkaline copper solutions, and by hammering and polishing, have an activity probably less than 1/9000th that of the reduced metal. When the surface was produced by sudden cooling of the vapour, or by thermal decomposition of copper salts of organic acids, or by reduction of copper oxides, a markedly active product was obtained. The passage of ammonia gas over the metal at 820° C. produced some activation. The physical appearance of the surfaces varied from a metallic colour, through dull yellow to red-brown. Generally the surface activity and the temperature coefficient of activity were nearly the same. A new method of comparing surface activities of preparations has been devised, depending on the behaviour of copper on alternate oxidation and reduction. The catalytic action is considered to be due to fixing groups of atoms in such a state of strain that strong specific external fields are maintained.—S. C. **Roy**: On the law and mechanism of monomolecular reaction.—F. A. **Williams**: The effect of temperature on the viscosity of air. The coefficient of viscosity of dry air free from carbon dioxide has been studied by a comparative transpiration method, with a silica spiral, from 15° C. to 1002° C. The results show that Sutherland's formula for the temperature coefficient of viscosity holds with great accuracy between 250° and 1000°, the value of *C*, the Sutherland constant, in this range being 172·6. Below 250°, Sutherland's law is no longer true, and the value of *C* falls off as the temperature decreases.—R. W. **Fenning**: Gaseous combustion at medium pressures. Pts. i. and ii. Pressure-time records of the explosion of a complete combustion, carbon monoxide-air mixture with additions of (*a*) hydrogen-air and (*b*) water vapour, give records identical with those produced by (1) carbon monoxide-air plus 1·2 per cent. of water vapour, (2) carbon monoxide-air plus 2·1 per cent. of hydrogen-air (nearly dry). Closed-vessel explosions of methane-air mixtures were also investigated, the initial temperatures ranging from 24° C. to 400° C., and the initial pressures from 30 lb. to 171 lb. per square inch. For a mixture