

## News and Views

## Christ's Hospital and Samuel Pepys

REFERENCE was made in the article on Pepys in NATURE of February 18 to his association with the Royal Mathematical School of Christ's Hospital, and the circumstances attending the foundation of the School are worth recalling. The project for a naval seminary, communicated to Charles II for his approval, was backed, in the first instance, by Sir Robert Clayton, Sir Jonas Moore, and Sir Christopher Wren; afterwards they were materially assisted by Pepys. Sir Jonas Moore was Surveyor General of the Ordnance and he solicited the favour of the Duke of York, then Lord High Admiral. A royal charter was granted and the School was opened in 1673 for forty boys. Little was done, however, by King Charles towards its maintenance, and the foundation suffered many vicissitudes. Pepys offered various objections from time to time to what he deemed inefficient methods of administration and teaching, and when, in 1698, he was appointed vice-president, he turned his attention to the re-modelling of the Mathematical School. The following is an extract from a letter of Pepys to the governors, dated May 4, 1694:—" . . . when, in the year 1676 a shipp of the King's (with another of certain private adventurers) design'd upon an Expedition for Discovery of a passage by the N.E. to China; wherein his then majesty had reason to expect many unusual occurrences, and therefore fit for a Child of this Foundation to share in the first advantage of: He was pleased to communicate his pleasure in it to the Hospital. In which, provision was made for the child's being not only well instructed in his service during the voyage . . . but returned at the end of it; as he accordingly was, and by us afterwards bound apprentice to a Merchant Man, Bartholomew Clement, Master of the Ffortune, trading to Virginia". In April 1699, Pepys was presented with the freedom of the City of London "in acknowledgment of the great zeal and concern for the interest of Christ's Hospital which he hath manifested on all occasions".

## The Marquis of Worcester at Vauxhall

AMONG those pioneers of the use of steam for pumping who have found a place in engineering history is Edward Somerset, second Marquis of Worcester (1601-67), whose life was written in 1865 by the civil engineer, Henry Dircks (1806-73). The Marquis lived in troubled times but all his life was interested in mechanics, and in 1663 published his "Century of Inventions", containing notes in vague and mysterious language on inventions to be tried and perfected. Quite early in life, with the German master mechanic, Caspar Kaltoff, he became connected with the Ordnance Factory founded by Charles I at Vauxhall and on this site later in life he proposed to found a college for training artisans, and erected his famous 'water commanding engine', which attracted considerable attention. The interest surrounding the projects and achievements of the Marquis led Mr. W. H. Thorpe to attempt to deter-

mine the exact site of the works at Vauxhall and in a paper read to the Newcomen Society on February 15, he gave an account of his researches and their results. The position of the property was, he said, indicated by a petition dated 1666 presented to Charles II by the Marquis, and the details of the property are described in a report made by the Surveyor General to the Duchy of Cornwall. Further evidence was obtained from Rocque's large-scale "Survey of London" made in 1739-45. For a description of the apparatus for pumping erected at Vauxhall, we are indebted to two foreigners who saw it, but neither of them refers to the use of steam. One of the notes in the "Century", however, refers to "an admirable and most forcible way to drive up water by fire", and it is this that gives the Marquis of Worcester his place among pioneers of the steam engine.

## Industry and Electrical Research

THE twelfth annual report of the British Electrical and Allied Industries Association (E.R.A.) presented at the annual luncheon on February 15 is satisfactory and interesting. A period of depression in commerce often means greater activity in development. The report shows that there are seventy-seven committees actively engaged in advising and directing research on problems of urgent importance to industry. An incidental advantage is the benefit that accrues to individuals who share in the constant exchange of views which takes place at these specialist committee meetings. At the start, the organisation was almost entirely based on the sections of the industry connected with manufacturing. Its activities have now widened very much and there are very few electro-technical problems outside its sphere. The Association was never designed to relieve manufacturing works of the necessity of solving their own specific problems. The report proves that many of the subjects considered interest several branches of the industry. The financial statement shows that the main contributions, so far as money is concerned, now come from the electric supply companies, railway groups, etc. Although the actual income for last year was greater than the preceding year, yet the Association has adopted a conservative policy, maintaining its organisation intact, expediting the completion of researches and advancing the plans for new work. Many members of the permanent staff have been engaged solely in scientific investigations and the reports they have published have been useful to the industry.

MATERIAL progress has been made during the year towards ascertaining the real properties of dielectrics, as distinct from empirical measurements of their behaviour under given conditions. Numerous commercial problems are under investigation, as, for example, the study of radio condensers in co-operation with the British Broadcasting Corporation. Improved efficiencies in steam generating plant have been

effected mainly by a better knowledge of the properties of steam and studies on the creep of metals. Important conclusions have been arrived at by researches on wind pressure on overhead lines, heating of buried cables and cables in ducts, the armouring of cables and methods of efficient earthing. The work done on the design and use of concrete poles may lead the Electricity Commissioners to reconsider the present stringent regulations relating to their use. Important advances have been made in new types of switches to break large currents at high voltages. We are now abreast of the work done in competing countries and in some directions we are in advance. Thanks to experimental research and advanced mathematical calculations, the problem of the interference caused by power circuits on communication circuits can now be regarded as solved. Good progress has been made in the study of problems of importance in railway engineering. The printed schedule of headings under which the railway researches are being conducted now runs to twenty pages.

#### Training the University Graduate

In the annual report presented by the Vice-Chancellor, Sir Charles Grant Robertson, to the court of governors of the University of Birmingham on February 23 comment is made on the increase in the number of students in spite of the general depression. It is pointed out that on the Continent, the universities are greatly congested, the attendances being, paradoxically, greater the greater the depression. The chief increase is in the faculty of medicine. The Vice-Chancellor raises the question whether the universities are doing all that they might or ought to do to meet the requirements of the rapidly changing social conditions. For example: "if the Universities are providing, and will have to provide to an increasing extent, direct training for careers, not contemplated twenty years ago, and those careers require a special technique, the essential problem is as to whether that technique can be taught, or whether the true function of the University lies in preparing for the most rapid acquisition of the technique elsewhere and as a post-graduate business. 'Technocracy' is the latest American gift, and we may fear the United States—especially as a giver—but do we not need as a nation, *outside* the Universities but definitely correlated to them, a series of 'schools' which will do for the University graduate, who has not been like the engineer technologically trained, what the Hospital does for the medical graduate who becomes, for a strictly limited period, a House Physician and a House Surgeon? Do we not also need a much closer connexion between the big Technical Colleges and Schools and the Universities?" In referring to the report of the Joint Standing Committee on Research, the Vice-Chancellor gives his opinion that "the Committee ought to be in a position to support a plan of research conducted by a *Department* as a whole on definite lines and for a definite purpose and extending over a defined period". The only obstacle to such a policy is of course the financial one.

#### Specialist Posts in Industrial Management

An article by Dr. W. H. Coates in the January number of the *Journal of Careers* reviews the developments in industry which have led to the creation of specialised posts in industrial management. These developments are the outcome of the changed conditions of industry and the heavier demands upon human qualities in management which are made by the growth of the scale of industrial enterprise and organisation. Where formerly several men filled one function in several small businesses, there are now several men each specialising in one function in large-scale business. These specialised activities can be broadly classified as they are concerned with production, sales or administration. We thus have the new key positions such as planning and production manager, transport manager, sales manager, secretary, personnel manager, labour officer, purchasing officer, etc. Specialisation in this way, concentration of research, thought, and practice within a limited field, is steadily leading to more efficient management, to fuller knowledge and to new ideas, and affords also a way of applying the scientific method to an increasing extent to the problems of administrative and executive control. Dr. Coates visualises alike a large field in which scientific methods have to be applied with an accuracy, patience and persistence comparable with those applied in the fields of physical science, and a field of human co-operation which makes large demands upon team work if the problems of large-scale industrial management are to be solved. Given such conditions, Dr. Coates sees no limits to successful management implicit in the size of the undertaking, and is confident that there is no lack of young men who are capable of tackling the present and future problems of large-scale management.

#### Fat in Aestivating Animals

It is a matter of common knowledge that many hibernating animals, in cold climates, survive their long and enforced fast by accumulating fat within the body, or immediately under the skin. It is by no means so generally realised that a precisely similar accumulation is made by many animals living in hot climates, which must also fast, in a state of aestivation, until food is again procurable. A good opportunity of making observations on some aestivating types has just been furnished by the birth at the Gardens of the Zoological Society of London of four 'fat-sand-mice' (*Steatomys*) and four 'fat-tailed gerbils' (*Pachyrurus*). For this curious adjustment has now apparently become fixed, since even in captivity the fat is still stored, though its need has disappeared. But there seem to be no records as to whether the amount of fat formed is less in captive animals, which have no need to fast, and at what stage in the growth of the young animal it begins to make its appearance. There seem to be no possible means of discovering why, in these two types, living under precisely similar conditions, one should form a deposit of fat over the greater part of the body, while in the other it should accumulate in the lower part of the back and tail.