

## Science News a Century Ago

### A Surrey Museum

ON May 30, 1836, *The Times* said: "A very interesting museum on a small scale has just been opened in the neighbourhood of the Surrey Zoological Gardens. The principal object of this establishment is professed to be the exhibition of a genuine, rare and nearly complete collection of the birds of the British Isles, and the profession is not belied by what is actually to be seen in the collection. It contains nearly 300 specimens of the feathered tribe of Great Britain, from the gigantic eagle to the diminutive wren. These specimens are many of them remarkably brilliant in plumage, and of beautiful diversities of colours. . . . They are arranged and classified according to the ornithological systems of Selby, Montague and Bewick, and the Linnaean names, as well as those by which they are generally and provincially known to the natives of England, are attached to the cases in which they are contained. There are also some North American specimens, which though in some degree different to the feathered species of our woods and fields, are in many respects extremely similar."

### Sir Francis Pettit Smith's Screw Propeller Patent

OF the many promoters of screw propulsion, the most important was Francis Pettit Smith, the Hendon farmer, whose first patent was taken out on May 31, 1836. Born on February 9, 1808, at 31 High Street, Hythe, Smith was educated at Ashford, and began life as a grazing farmer on Romney Marsh, whence he removed to Middlesex. He was always fond of making models, and early in 1836 he drove a model boat by means of a screw on his pond at Hendon, and at about the same time he exhibited a screw-driven model boat at the Adelaide Gallery. With the assistance of Wright, a banker, and Thomas Pilgrim, a practical engineer, in the summer of 1836 he constructed a boat of ten tons having an engine of six horse-power and a single-threaded wooden screw with two complete turns. From these experiments sprang the developments which led to the building of the *Archimedes*, the *Novelty* and H.M.S. *Rattler*, and the introduction of the screw into both warships and merchant ships. Twenty-two years after he took out his patent, Smith was presented with a testimonial at a public dinner in St. James's Hall, Robert Stephenson being in the chair. The testimonial took the form of a fine silver salver and silver claret jug which Smith bequeathed to the Science Museum. He died in South Kensington on February 12, 1874, and was buried in Brompton Cemetery.

### Temperature of Underground Springs

WRITING to Prof. Jameson on June 1, 1836, J. D. Forbes said: "On occasion of a late visit to the district of Lead Hills I suggested to my friend and former pupil, Mr. Irving of Newton, the importance of determining the temperature of the springs in the bottom of the Lead Hill Mines at this particular epoch. The working having been discontinued since the end of March, any supposed influence of animal heat and light is avoided, and yet the pumping of the water has been regularly carried on. Mr. Irving immediately and zealously undertook the inquiry; and descended to the deepest part of the mine on the 16th of May and found the temperature of the

water in the bottom to be 49°. This was at depth of 95 fathoms below the entrance to the Susanna Vein. . . ."

### Visitation of the Royal Observatory, Greenwich

IN his autobiographical notes for 1836, Airy records: "On June 4th the Annual Visitation of the Observatory was held, Mr. F. Baily in the chair. I presented a written Report on the Observatory (a custom which I had introduced at Cambridge) in which I did not suppress the expression of my feelings about chronometer business. The Hydrographer, Captain Beaufort, who was one of the Official Visitors, was irritated: and by his influence the Report was not printed. I kept it and succeeding Reports safe for three years, and then the Board of Visitors agreed to print them; and four Reports were printed together, and bound up with the Greenwich Observations of 1838."

## Societies and Academies

### LONDON

Royal Society, May 21. SIR PATRICK LAIDLAW and W. J. ELFORD: A new group of filterable organisms. A group of filterable saprophytic organisms has been discovered in sewage. In the normal course of their development, they have small forms of about the size of vaccinia virus (0.125-0.175  $\mu$ ), though larger forms also occur (0.5  $\mu$  or more). Cultures are readily obtained by filtering mixtures of sewage and Fildes's broth through membrane filters of appropriate porosity, and incubating the filtrates at 30° C. They can be maintained in subculture in indefinite series. Three strains have been isolated which differ in their cultural characters and also serologically, though morphologically they appear the same, and they all show the same end-point in filterability. These organisms are of interest in view of the small forms, which although comparable in size with some of the viruses, can nevertheless lead an independent existence. It is, as yet, uncertain how the organisms should be classified. MARION A. WATSON (HAMILTON): Factors affecting the amount of infection obtained by aphid transmission of the virus Hy. III. Experiments have been carried out in order to show the effect of various factors on the percentage of infection obtained with the virus Hy. III in tobacco, using its insect vector *Myzus persicae*. A maximum percentage infection was obtained during the winter months and a minimum during the summer months. The percentage infection increases with the number of aphids used per plant, and the relation between the numbers of infection obtained for each aphid number shows that the infections are local and independent. The percentage infection increases with increased feeding time on the healthy plant, but there is no indication of a preliminary time period in which no infection is obtained. The percentage infection decreases very rapidly with increasing time on the infected plant from 2 minutes to 1 hour. After 1 hour it increases slightly with further increase of the feeding periods. R. RUGGLES GATES: Genetical and taxonomic investigations in the genus *Oenothera*. This paper presents the results of a three years' genetical survey of the genus *Oenothera* in eastern Canada and adjacent areas. By combining genetical with taxonomic methods, a fuller knowledge is attained of the wild

populations in a particular area than has been possible in any case hitherto. Thirty-two new species and varieties are described, as well as many smaller variations, and much light is thrown on the geographical distribution of these and other forms, as well as their relationships. There are indications of movements from south to north in several different lines of descent, and also of a coastal series of forms with strongly bent stems. Six of these new species have produced trisomic mutations, most of them directly from wild seeds, and one a triploid mutation, which shows that the mutation phenomena are not the result of cultivation. The catenation in all the species examined is a ring of 14 chromosomes. Certain prairie species show marked alteration of habit when grown in England, and a new category of *evanescent characters* is made for differential characters which appear only at certain stages of development.

## PARIS

Academy of Sciences, April 20 (*C.R.*, 202, 1353-1388). ERNEST ESCLANGON: The equations of dynamics deduced from the principle of limited relativity. SERGE BERNSTEIN: The domain of convergence of the polynomials  $B_n f(x) = \sum_0^m f(m/n) C_n^m x^m (1-x)^{n-m}$ . MARCEL GODCHOT and PIERRE VIÈLES: Active methylglycolic acid and its derivatives. I. VINOGRADOV: Some new inequalities in the theory of numbers. ROBERT FORTET: Probabilities in chain. PAUL REGNAULD: The encounter of two material bodies. ALEXANDRA PROCA: The theory of the positron. ANDRÉ THURET: The calculation of the specific heats of the mineral oxides vitreous silica, lime, alumina as a function of the temperature. Formulæ expressing the specific heats as a function of the temperature are given for these three substances, and the corresponding curves shown with the experimental values observed by various authors. STÉFAN PROCOPIU: The electromotive force of movement of metals in water and their electro-kinetic potential. ROBERT GUILLIEN: The intensity and form of the absorption bands of liquid oxygen. CHARLES MAUGUIN: The theory of the reflection of the X-rays by crystals. DANIEL SCHNÉEGANS: The stratigraphy of the Lias of the Ubaye sheet in the Morgon massif (Basse-Alpes). JACQUES BONDON and BRANKO YOVANOVITCH: The ante-Carboniferous strata of western Morocco. MILLE. BERTHE DELAPORTE: New researches on the cytology of bacteria. MAURICE DOLADILHE: Contribution to the study of one of the constituents of the acidoglobulins: protein C.

## CAPE TOWN

Royal Society of South Africa, March 18. A. W. ROGERS: The superficial deposits of the Kalahari. (presidential address). H. E. MORRISON and J. T. MORRISON: The relationship between winter rainfall and barometric pressure, barometric tendency and wind direction at Cape Town. A. F. SPILHAUS: A study of the aspiration psychrometer. T. F. DREYER: (1) The archæology of the Florisbad deposits. Evidence indicates that the local development of the fluted flake is older than the coastal development, and that it was here synchronous with the development of the Stellenbosch elsewhere. The evidence is based upon the absence of bone tools, the presence of numerous extinct mammalian fossils, and the dis-

tribution of implement types. (2) The archæological succession of the natural deposits at Plettenberg Bay and Mossel Bay. It is deduced that there are a black surface layer, a layer of red sand, and an intercalated reddish yellow layer. This latter contains implements of late Stellenbosch type. At Plettenberg Bay this series overlies a white sand (*karringmelk grond*) which yields Stellenbosch types. It is presumed that the pre-Red Sand deposits are synchronous at the two places. If this is so, the implements of the lime talus at Mossel Bay would be older than those in the white sands at Plettenberg Bay, which is further indicated by typology. M. H. GIFFEN: The chromosome numbers in the genus *Berberis*. A. C. LEEMANN: Contribution to the study of *Dichapetalum cymosum* and the ecology of the Transvaal veld. P. W. LAIDLER: South African native ceramics.

## Moscow

Academy of Sciences, *C.R.*, 4, No. 8-9, 1935. J. NATANSON: The representation of functions by formulæ analogous to the Fourier functions. B. VULICH: Metric spaces of a certain type. N. GUNTHER: Spectral function of certain integral equations. G. GAMBURCEV: Establishment of electro-mechanical equivalents. D. D. SARATOVKIN: Distribution of admixtures at crystallisation. P. N. ULJANOV: Drying and sterilising wood and other structural materials with infra-red rays. R. R. CHUGAIEV: Stability of earth slopes subjected to the action of ground water flow. J. A. ARBUZOV and B. M. MICHAÏLOV: Thermal disintegration of dimethylcyclohexane. B. A. RUBIN and L. I. NAUMOVA: Problem of biochemical characteristics of varieties in vegetables. V. S. BUTKEVICH and L. K. OSNICKAJA: Consumption of succinic acid by fungus films as affected by acetate. A. P. VINOGRADOV and G. G. BERGMAN: Vanadium in the petroleum and bitumens of the U.S.S.R. A. H. ANDRES and J. VOGEL: Karyological investigation of the embryonal oogenesis in man. G. E. BYKOV: On the age and the conditions of formation of brown coals in the upper Zeya plain. J. V. RAKITIN: Hastening the ripening of melons. S. N. JAGUZINSKIJ: Observations on the variability of *Scenedesmus* Meyen in pure cultures. A. M. POPOV: Fauna of the Avacha Bay and its distribution into communities. A. I. KURENCOV: Zoogeographical conclusions from an expedition to the middle Sikhote-Alin range.

## ROME

Royal National Academy of the Lincei (*Atti*, 22, 551-608; 1935). F. SACCO: Transversal tectonic lines of the Appenine (2). A. PELLOUX: Scheelite from the Gerrei mines in Sardinia. G. LAMPARIELLO: Behaviour at infinity of the usual functions of a point. F. TRICOMI: (1) Transformation and reciprocity theorem of Hankel. (2) A theorem of Abel for Hankel's transformation and some new applications of a formula on Bessel functions. L. SONA: Transloculatory current which invests a bilateral lamina (6). G. SUPINO: Plane elastic problem and its interpretation in space (2). S. FRANCHETTI: Liquid state and interatomic forces (2). M. AIROLDI: Case of accelerated erosion in the Valle d'Urba. G. BRUNELLI and G. CANNICCI: Preliminary notice of the chemical and biological characteristics of the Lake of Massaciucoli. S. RANZI: Researches on the absorption of mineral substances by the embryo of *Sepia officinalis*.