Science Up to Date

EXHIBITS AT THE ROYAL SOCIETY CONVERSAZIONE

THE May conversazione of the Royal Society was held in the first week of the present month. It has been customary of late years to have two of these receptions in each year, the first being for gentlemen only, and the second, which is usually held in June, being for ladies also. The guests who attended the gathering in Burlington House on the 2nd instant were received by the President, Lord Kelvin, who was supported by the Treasurer, Sir John Evans, and the secretaries, Professor Michael Foster, Lord Rayleigh, and Sir Joseph Lister. Among the oldest guests were the venerable Dr. Martineau (in his ninetieth year) and Mr. Perigal, of the Royal Astronomical Society (in his ninety-sixth). Towards the end of the evening many dropped in from Lord Salisbury's dinner-party, and added to the brightness of the company by their brilliant uniforms. The suite of five rooms on the first floor, including the large library, and several rooms on the ground floor, were thrown open to the guests. The exhibits, as in previous years, were singularly interesting, though in many cases the visitor need have been possessed of more than a smattering of science before flattering himself that comprehension even of the vaguest kind was his privilege. For an example there was in the Principal Library an instrument exhibited by Mr. Joseph Goold consisting of a twin elliptic pendulum, an instrument of the "most simple construction" maybe, but not endowed with a most simple description. Says its author: "This is an instrument of most simple construction for combining in one resultant figure the motions of two ellipses (or two isochronous pairs of harmonic vibrations) in the same plane. The range of ratios for the two elliptic motions is from about 3·2 to 5·1, less or greater according to the available lengths of the pendulum parts. Hundreds of complex intermediate ratios may be delineated in endless phases and widely contrasted amplitudes." In the first room Professor Hunter Stewart and Mr. Henry Cunynghame exhibited their apparatus for micro-photography, and Mr. Eric Bruce showed some very pretty experiments with an aerial graphoscope, illustrating the persistence of vision. An image thrown by a lantern on a rapidly revolving lath, about an inch in breadth, appears as if suspended in mid-air. A dagger like Macbeth's and an equally phantasmal lady were shown in this way as if painted upon an invisible screen. In the adjoining room Mr. Theodore Bent (just back from Southern Arabia) showed some of the antiquities and anthropological curiosities which he had brought with him, and which, we understand, were only landed about three days before the exhibition. Some of the plants which had been collected on the expedition were shown by permission of the Director of Kew Gardens. In the same room General Pitt-Rivers showed models of an entrenchment of the Bronze Age in Rushmoie Park which he had recently excavated. With the exception of the two last-mentioned exhibits, and a small find from the brick-earth at Folkestone, exhibited by Mr. Richard Kerr, anthropology was not represented, but the nearly allied science of palæontology found a good representative in Professor Seeley, who showed specimens of fossil reptiles from South Africa. It may be remembered that Professor Seeley, a year or two ago, undertook an arduous journey in South Africa for the express purpose of clearing up certain scientific questions relating to the former reptilian inhabitants of that quarter. He brought home with him a rich harvest, and the comparison of his own "finds" with the specimens existing in various European museums, notably with those of Russia, have solved many doubtful points. The specimens exhibited the other night were the only known portions of the Dicynodont skeleton, which illustrate the vertebral column and limbs. They were collected by the Rev. G. Murray, by the Albany Museum authorities, and by Professor Seeley himself. The exhibitor further showed diagrammatic representations of two extinct carnivorous reptiles, allied to the Theriodont reptiles of the Karoo district of Cape Colony, called respectively Rhopalodon and Deuterosaurus, and a fossil skull of the latter was shown. This, which was the principal geological exhibit, is figured in our pages.

Exhibits bearing upon topics of current interest were Professor Norman Lockyer's "Maps and Plans which accompany the Report on Nile Reservoirs, recently published by the Egyptian Government" (Professor Lockyer having himself only recently returned from a scientific mission to Egypt), and Mr. Wimshurst's "Models showing an improved method of communication between Shore Stations and Lightships, or other like purposes." The latter, of which we give an illustration, was explained by the exhibitor as consisting of suitably wound coils of insulated wire upon the swivel pin of the moorings of a buoy, the one coil being in communication with the shore station, and the second coil in communication with the ship. Signals or sound are transmitted by induction, or by electro-magnetic induction. Apart from the facility thus afforded for communication with lightships, the buoy can be moored at a considerable distance from the shore, and any vessel which may wish to communicate with the land can do so by attaching a coil of insulated wire to the mooring chains.

Electricity, although not so fully represented as last year, was far from being neglected. Some new phenomena in "vacuum" tubes with alternate currents were shown by Sir David Salomons, being classified as (1) Experiments showing how the striæ are formed in vacuum tubes, and (2) experiments showing that the striæ disappear when the current in the tubes exceeds a certain limit. Sir David states that his researches in this direction are still going on, and that he intends to repeat them with tubes containing various gases, and to vary the kind of current used. Another exhibit of even more general interest was that of Dr. Alexander Muirhead, who showed his new form of siphon recorder and curb transmitter, in connection with an artificial cable of the same capacity and conductor resistance as that which is to be laid across the Atlantic in July next. A speed of fifty words a minute is attained. Even the outsider could be interested, too, in seeing some of the applications of electricity as a heating agent, in the form of Mr. Crompton's electrically heated altar and soldering bits for soldering and brazing, and Professor Moissan's electric furnace by means of which a temperature of about 3,500 deg. centigrade is produced.

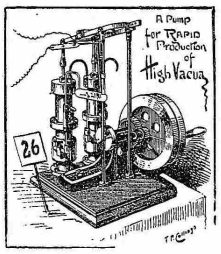
By means of this furnace M. Moissan has not only succeeded in reducing the most refractory metals, but has fused and volatilised both lime and magnesia. Nearly all metals, including iron, manganese, and copper, have also been vapourised, whilst by fusing iron with an excess of carbon, and then quickly cooling the vessel containing the solution of carbon in molten iron by suddenly plunging it into cold water, or better, into a bath of molten lead, he has been successful in producing small colourless crystals of carbon, identical in their properties with natural diamonds. We give an illustration of M. Moissan's furnace, and some of our scientifically minded readers may be interested in the following description of it as given in the programme of the conversazione:—

> The furnace consists of a parallelopiped of limestone, having a cavity of similar shape cut in it. This cavity holds a small crucible, composed of a mixture of carbon and magnesia. The electrodes are made of hard carbon and pass through holes cut on either side of the furnace, meeting within the cavity. For the purpose of certain experiments, a carbon tube was fixed in the furnace at right angles to the electrodes, and so arranged as to be to mm. below the arc, and about the same distance from the bottom of the cavity. This tube contains the material to be heated, and by inclining it at an angle of about 30 deg., the furnace may be made to work continuously; the material being introduced at one end of the tube and drawn off at the other.

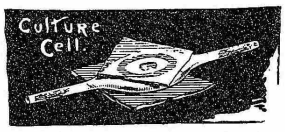
Mr. Wilde's magnetarium for reproducing the phenomena of terrestrial magnetism, and Professor Silvanus Thompson's charming illustrations of polyphase electric currents (one of the most popular shows of the evening) complete the list of electric and magnetic exhibits.

Several pieces of apparatus connected with "physical" science, in its narrower sense, were shown, but none of them attracted more attention than Mr. Fleuss's patent vacuum pump. By its means vacua comparable with those obtained by a Sprengel pump are reproduced, but very rapidly and without the use of mercury, and experiments which formerly occupied hours can now be conducted in as many minutes.

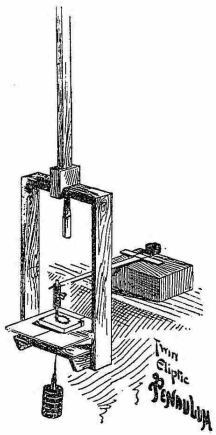
In biological science the exhibits were few but interesting. The Marine Biological Association had some living marine creatures, and Mr. Poulton showed some of his examples of larvæ influenced by the colours of their surroundings. Professor Waymouth Reid showed some microscopic specimens illustrating the process of secretion in the skin of the eel, and Professors Lankester and Howes, who have been crossing swords in the pages of *Nature*, had an opportunity of supporting their respective theories by showing their respective specimens of the South American mud-fish. But among things biological the most novel, and, perhaps, the grimmest was a photograph taken by the action of light on living bacteria. This was shown by Professor Marshall Ward in connection with his exhibit of apparatus employed for observing and measuring the growth of micro-organisms under different conditions; and it illustrates his recent discovery, so important to sanitary science, that *light* (quite apart from heat) kills certain noxious micro-organisms, as, for instance, the bacillus which produces anthrax. Henceforth, let housekeepers who shut out the sunlight to save their carpets and curtains amend their ways!



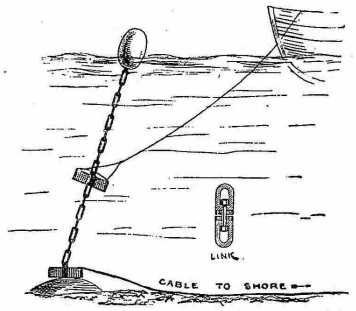
A PUMP FOR RAPID PRODUCTION OF HIGH VACUA
Shown by Mr. Henry A. H. E. Fleuss



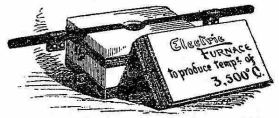
APPARATUS FOR OBSERVING AND MEASURING THE GROWTH OF BACTERIA, FUNGI, AND OTHER MICRO-ORGANISMS.
Shown by Professor Marshall Ward, F.R.S.



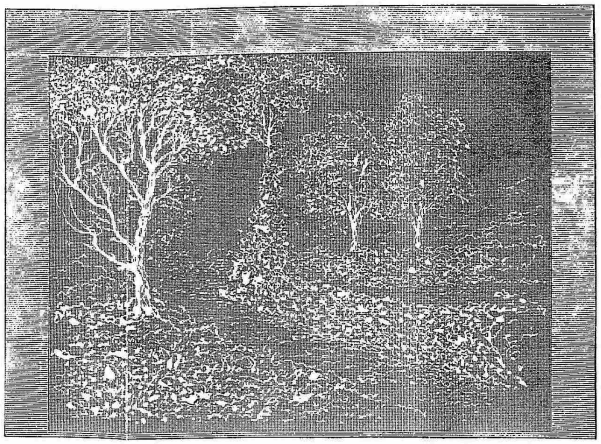
TWIN ELLIPTIC PENDULUM AND PENDULUM FIGURES
Exhibited by Mr. Joseph Goold



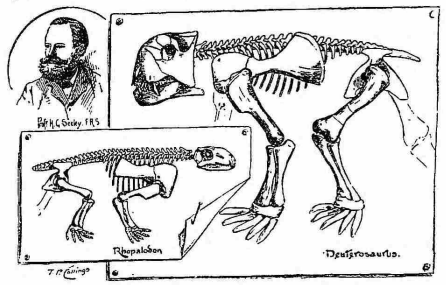
IMPROVED METHOD OF COMMUNICATING BETWEEN SHORE STATIONS AND LIGHTSHIPS
Shown by Mr. J. Wimshurst



ELECTRIC FURNACE WHEREIN A TEMPERATURE OF ABOUT 3,500 DEG. C. IS PRODUCED
Exhibited by M. Henri Moissan



A PHOTOGRAPH TAKEN BY THE ACTION OF LIGHT ON LIVING BACTERIA AFTER TWO HOURS' EXPOSURE
Shown by Professor Marshall Ward, F.R.S.



RESTORATIONS OF TWO EXTINCT CARNIVOROUS REPTILES ALLIED TO THE THERIODONT REPTILES OF THE KAROO DISTRICT OF CAPE COLONY
Shown by Professor H. G. Seeley, F.R.S.

"The Wild Duck"

BY W. MOY THOMAS

DR. IBSEN'S *Wild Duck* has enjoyed its two nights and one afternoon on the stage of the ROYALTY, much to the delight of the Independent Theatre Society and the admirers in general of the Norwegian poet's prose dramas. These persons, however, form but a limited section of the playgoing public, and it would be idle to expect any more extended favour for the author's gloomily ironical picture of Norwegian Society, with its hypocritical pretences, its ridiculous self-deceptions, its baffled aspirations, its petty meannesses, and its abortive ideals. What, it may be asked, is the object of the dramatist in presenting us with these sombre and disheartening views of life, in which profligates and impostors, like the elder Werle, flourish in their pitiful way, while their poor brokendown tools and associates in fraud, like old Ekdal, are condemned to bear the entire burden of their joint misdeeds; in which weak-minded, selfish dupes of their own cant, like Hialmar Ekdal, go on "steeping themselves," as Relling says, "in a syrup of sentiment and self-admiration and self-pity," while poor innocent children, like his little daughter Hedvig, are driven to shoot themselves through the heart with a pistol? It seems at least possible that Dr. Ibsen is not moved by that *odium humani generis*, which at the first glance appears to inspire these depressing productions, but is only desirous of disgusting us with the present constitution of society, together with what he is pleased to consider its false political, social, and ethical standards by showing us in action the hopeless muddle which he regards as their necessary result. He has been reported to have spoken of an intention of "placing the torpedo under the ark—"the Ark" being understood to mean the received ideal of wedded life and the family circle. From this point of view Dr. Ibsen is simply an Anarchist who happens to prefer prose plays to dynamite bombs. When all Governments, both Imperial and municipal, have succumbed to the terror of what Mr. Swinburne calls "the sudden swerving hand" of Orsini and his disciples, and "laws are all repealed," it will perhaps be found that the Anarchists have some sort of constructive theories. At present, however, Dr. Ibsen's views and tactics, like those of the bomb-throwing section of the party, are confined to the destructive stage. This is, perhaps, why they are so irredeemably repulsive to those who have not acquired a taste for his methods. The mystic symbolism in which he deals so extensively is less easily explained; but if it has its origin in a belief that there is nothing like a good mystery for setting tongues wagging and thus awakening curiosity and attracting attention, it must be confessed that the belief is supported by experience. When a man of the intellectual calibre of Count Tolstoi proclaims himself unable to discover what Dr. Ibsen is driving at, what more gratifying to the self-love of the Ibsenite than to feel that there is one, at least, who has been clever enough to pluck out the heart of the mystery. Unfortunately the privileged interpreters do not agree. As regards the wild duck with the couple of shots in his body, and his leg maimed by the bite of the dog who brought him up from the bottom of the sea, it is evident enough, from allusions in the text, that he is supposed to symbolise the crippled and maimed condition, morally speaking, of old Ekdal; but why this pet of the Ekdal household is religiously guarded in a garret and made the object of so many portentous allusions, or why Hedvig is exhorted to shoot the wild duck as "a sacrifice," not to speak of numerous other problems equally insoluble and equally unprofitable, none but the initiated will venture to say. The play was, on the whole, exceedingly well acted, though Mr. Abingdon's tendency to caricature and uniformity of tone and manner in the part of the younger Ekdal failed to do full justice to the subtlety and complexity of the character. Mrs. Herbert Waring's Gina, Miss Winifred Fraser's Hedvig, Mr. Harding Cox's old Ekdal, and Mr. Lawrence Irving's Relling were, on the other hand, performances distinguished by genuine creative power. In justice to Mr. Grein, it should be said that, although he labours under the disadvantage of having to recruit a company for each separate venture, the distribution of parts in the performances of the Independent Theatre have been judicious, with one or two exceptions only, while the whole have given token of careful study and painstaking preparation.

SIGNORA DUSE'S PERFORMANCES

The Signora Duse's second season in London has for the present been accompanied by no greater novelty than the Italian version of Dumas's *La Dame aux Camelias* in which it will be remembered that this distinguished Italian actress made her first appearance on the English stage at the LYRIC Theatre nearly twelve months ago.