

SIR EDWARD SABINE'S CONVERSAZIONE

WHATEVER may be said by those to whom the grapes are sour, the gathering which met at Burlington House on April 23 to greet the President of the Royal Society, under animating circumstances, can hardly fail of beneficial results, whether regarded from the social, the moral, or the scientific point of view. It would not be easy to devise a happier way of bringing novelties at once under practical criticism—of making the outliers of science acquainted with the centre, of enabling investigators to compare operations and discuss facts and speculations, and of giving occasion for renewal of intercourse and removal of misunderstandings.

As usual, the range of articles exhibited was wide enough to include different branches of science, from astronomy to natural history, and from electro-magnetism to physiology, with achievements of fine art, and of arts mechanical. In an exhausted hydrogen tube placed across the poles of an electro-magnet, Mr. C. F. Varley produced a beautiful luminous arc, the dimensions of which he could vary at pleasure by a change in the size of the negative pole, and occasion a change of direction by a slight elevation of one end of the tube.

Spectroscopy, as we have more than once had occasion to record, owes much to the constructive skill of Mr. Browning. We shall return, on a future occasion, to his new automatic spectroscope.

Mr. C. W. Siemens's Electrical Resistance Pyrometer well maintains the reputation of the inventor for application of philosophical principles to mechanical uses. It is the very salamander of pyrometers, and will measure the temperature of the most highly heated fiery furnace; which must render it indispensable in operations where intense heat is required, and to all experimentalists who know the imperfections of the pyrometer in ordinary use. The construction of the new instrument is based on the physical fact that the resistance of pure metals to the electric current increases with increase of temperature in a simple absolute ratio. A platinum wire of known resistance is coiled upon a small cylinder of fireclay, and is covered by a tube of the same metal, which protects the wire from the destructive action of flame, without preventing access of heat. Thus constructed, the pyrometer is placed in the furnace, and is connected by wires with a Daniell's battery of two cells, and with a compact Resistance-measurer, specially devised by Mr. Siemens, on which the observer makes observations at his ease. As the fire burns, the electrical resistance of the platinum coil rapidly increases, communicates its progress to the measurer on which the indications of temperature may be read off as entirely trustworthy, even up to the melting point of platinum. The importance of such an instrument as this cannot fail to be recognised by practical men, whether among natural philosophers or workers in the pyrotechnic arts; and, for our part, we cordially welcome this new pyrometer as a logical sequence from the inventor of the regenerative gas-furnace with its fierce heat-producing capabilities.

Mr. Jerry Barrett, who relieves his hours at the easel with natural philosophy, exhibited an auxiliary air-pump, which appears to produce that essential desideratum, a perfect Torricellian vacuum. To an ordinary air-pump he attaches an air-chamber or reservoir, and, communicating therewith, two cylindrical glass vessels charged with mercury, and connected by a V tube. On working the pump the pressure of the air in the lower vessels compels the mercury to rise and fill the upper one, in which an ingeniously contrived platinum valve plays an important part. By continuing the process of filling and emptying (the details of which are not easy to describe), the desired vacuum is eventually obtained, and the exhausted tube on the top of the pump is ready for experiment. We learn that a well-known experimentalist was so favourably impressed by the capabilities of this pump that he intends to

have a number of large tubes made for a series of experiments.

In these days of busy telegraphy, Mr. J. Parnell's new secondary battery is worth attention. It is so constructed as to be capable of a large amount of heavy work, having forty cells, each containing a pair of copper plates immersed in a solution of the impure carbonate of sodium, known in commerce as "soda." By this employment of an alkali, the electromotive force produced is supposed to depend on the electrolytic reduction of the sodium. The battery is arranged in ten compound cells of four couples each, and is charged by a small battery of five Grove cells, and after the connection has been established for a few seconds, a commutator of peculiar construction is brought into play, and excites the whole forty cells to activity. It is thought that a battery so constructed, which can be energised at pleasure by a brief communication with the small Grove, will be found of service in telegraphing through lines of great resistance.

Rear-Admiral Inglefield's contrivance for making the water in which a ship floats do the work of steering appeals to every Englishman, for are we not all interested in our navy, whether Royal or commercial? It is a contrivance which involves a large economy, for instead of a number of men labouring at two wheels, and with relieving tackles, it requires one small wheel only, and one man to steer the largest ship afloat; estimating roughly the pressure of the water as half a pound per square inch for every foot of the ship's draught. Admiral Inglefield admits the water through the bottom by a "Kingston valve" into a cylinder placed at the stern. The piston of this cylinder works a double-action force-pump, which sends the water to two hydraulic cylinders; these are connected with a tiller four feet in length, and thus, by movements of the small steering wheel, the ship is easily steered. Trials made with this apparatus on board the *Achilles*, one of the largest vessels in the navy, proved satisfactory; and in an improved form it is to be fitted to the *Fetha Bulend*, a corvette now building for the Turkish Government. Unfortunately for the visitors to the conversazione, the model exhibited, owing to lateness of delivery, could not be shown in work; but there was a skeleton of the corvette's stern, showing the position of the apparatus, and near it stood one of the small steering-wheels. By this and Admiral Inglefield's explanations, the naval men present could form an opinion of the new method, compare it with the existing method, and mark how surely the helm could be kept hard over during full speed, and how rapid and easy were its movements generally.

Mr. J. B. Rogers exhibited his life-saving apparatus, by which he has obtained the prize long offered by the Shipwrecked Mariners' Society, and furnished means of rescue, which, judging from the trials made near Portsmouth under authority of the Admiralty, are likely to render valuable service. With a mortar and a small charge of powder he throws out an anchor from the shore, and by means of the double rope thereto attached, a lifeboat can be hauled out through a heavy surf in weather when it would be impossible to launch her in the usual way; and with the further advantage that the hauling need not be done by the crew of the boat, who would consequently be fresh for their laborious task of rowing out to the ship in distress.

The Meteorological Office of the Board of Trade in carrying out their scheme of "ocean statistics," from which great advantage may be anticipated to navigation and to meteorological science, have constructed two charts, the value of which all whose business it is to go down to the sea in ships will appreciate. The wind chart is the first instalment of a series intended to show the best route for crossing the line in each month of the year. To facilitate reference, it is ruled in squares each representing a degree, with the direction and force of the prevailing

winds. This is, we believe, the first attempt to show the force of the wind in a chart of this nature. The area embraced lies between the equator and 10° N. and 20° and 30° W., and contains the observations of five years for the month of November. When the other eleven months of the year are represented each by a chart, mariners will be able to choose a way across "the Doldrums" where they may be likely to find the most favourable winds and currents. From this it will be understood that the current chart is constructed in a similar style.

Principal Dawson, of McGill College, Montreal, who has just arrived with a fine collection of fossils, could not have desired a better opportunity for exhibiting them than was afforded by the conversazione. There, while showing his specimens to the *élite* of the scientific world, he could talk to them about the geological survey of Canada, and the Peninsula of Gaspé, with its cliffs of "Upper Silurian," 600 feet in height, its "Devonian sandstones" and "lower carboniferous deposits, and its arched rocks forming magnificent coast scenery. Among those fossils are two large trees, *Protaxites Logani*, a species of *Psilophyton*, and a *Cyclostigma*, the latter a genus previously met with nowhere but in the Devonian rocks of Ireland. Other kinds include *Cordaites*, *Psaronius*, *Antholithes*, *Asterophyllites*, and a variety of ferns; and occurring in the animal remains, we find *Cephalaspis*, the first of the kind yet found in America, and *Machairacanthus*, and other large fishes. As Dr. Dawson is to read a paper on these important fossils at the Royal Society this evening, we may hope to see their story told in due time with suitable illustrations in the "Philosophical Transactions."

Dr. Carpenter exhibited with microscopes, with the actual specimens, and with a considerable breadth of well-executed diagrams, some of his treasures from the "deep, deep sea." In friendly neighbourhood, Prof. Tennant showed fossil specimens of some of the same creatures. And not far distant were hung Lieut. Palmer's clever drawings of living animals from the surface of the sea, captured in the China Sea, the Indian Ocean, and the Atlantic. These drawings testify to Lieut. Palmer's skill and industry. The animals are represented life-size and in their natural colours. Among them we observed the *Globigerina*, which may, perhaps, be taken as evidence that this creature does not, as some have supposed, exclusively inhabit the bottom of the sea. Considering that there is always room for natural history researches, the Admiralty should be able to find such employment for Lieut. Palmer as would exercise his artistic faculty and his habit of observation.

We are far from having exhausted the subject, but we must close here. Need we pause to draw a moral, or to point out that in such a conversazione as we have attempted to describe there is a tangible gain to science? It is well for inventors and experimentalists that they should hear what contemporaries say of their schemes and experiments, and much can be said and done with advantage amid the free talk of a general gathering which could not be permitted in the formal meeting of a scientific society. Let proper discrimination be used in the selection of articles for exhibition: science will then continue to benefit by soirées.

RECENT ACCESSIONS TO THE ZOOLOGICAL SOCIETY'S GARDENS

THE collection of living animals belonging to the Zoological Society of London and kept in their gardens in the Regent's Park contains, as most of the readers of NATURE are probably aware, by far the largest and most nearly complete living series of representatives of the various classes of Vertebrate animals that has ever been brought together in one spot. Great as the exertions that have been made of late years in some of the corresponding establishments on the Continent, the sister

societies have never succeeded in rivalling the English collection as a whole, although they have occasionally bid fair to surpass it in some particular point.

The whole number of animals in the Zoological Society's Gardens usually somewhat exceeds two thousand—on the first of January last it was 2,031—consisting of 598 mammals, 1,245 birds, and 170 reptiles and batrachians, besides the fishes in the aquarium, which do not appear to be included in the annual census. Constant additions are made to the series, not only by purchase, but also by gifts of correspondents in every part of the world, and by exchange with the continental establishments. By these means the collection is kept up to its normal standard—the death-rate, as in all living zoological collections, being, in spite of every care and precaution, extremely heavy. During the past month of March 90 additions are recorded in the Society's register as having been made to the Menagerie. 33 of these were by gift, 33 by purchase, 4 by exchange, 5 by birth, and 15 were animals received "on deposit." The decrease during the same period by death and departures was 96, showing a total loss to the collection during the month of 6 individuals.

The most noticeable amongst the acquisitions to the Menagerie in March last were the four following:—

(1). Examples of two very fine new pheasants, recently discovered in Upper Assam by the well-known Indian ornithologist, Dr. J. C. Jerdon, and named by him *Lophophorus sclateri*, and *Cerionis blythii*. These birds are both of very great interest, not only as being brilliant additions to the two magnificent groups to which they belong, but also as being typical specimens, *i.e.*, the identical specimens upon which Dr. Jerdon has founded these two species.

The "Monaul," or Impeyan pheasant of the southern slopes of the Himalaya, is one of the best known of Indian game-birds, and at the same time one of the most magnificently-coloured birds of British India, inasmuch that Mr. Gould has chosen it as the representative bird for the cover of the numbers of his great work on the "Birds of Asia." For many years this bird was believed to stand quite alone, and to be the sole existing representative of the genus *Lophophorus*. A short time ago, however, Monsignor Chauveau, titular Bishop of Lhasa, who has recently found it necessary to retire from his Tibetan diocese into the confines of China, sent home from *Tatsien-lieu*, in the western part of the province of Sechuen, where he has taken up his abode, a collection of birds, amongst which were a pair of a very fine new species of Impeyan pheasant. These specimens, after being named in France *Lophophorus Lhuysi*, in compliment to M. Drouyn de Lhuys, the Minister of Foreign Affairs, whom we suppose the describer was anxious, for some good reason, to propitiate, passed into the collection of the British Museum, where they may be now seen in the Ornithological Gallery. It was thus proved that a second Impeyan pheasant is found on the northern slopes of the great central range of Asia, where it doubtless occupies a corresponding elevation and fulfils similar functions in the economy of nature to the well-known bird of the Indian Himalayas.

The discovery of the present bird by Dr. Jerdon, which, although somewhat different in certain details of structure from the two former, belongs strictly to the same genus, serves to further prove to us how much still remains to be done in zoological discovery, even amongst what are generally supposed to be the best-known divisions of the Vertebrata. Being crestless, Sclater's Impeyan, which has been named by Dr. Jerdon after the secretary of the Zoological Society of London, renders the old generic term *lophophorus* less applicable to the group. But in other points it does not materially differ, and at any rate is sufficiently near the common Impeyan to induce the only known individual of Sclater's Impeyan now in the Zoological Society's gardens to be quite ready to associate with a female of the latter which had been placed along with him.