

against the centralisation of our various Universities, Licensing Boards, &c., "with its inevitable acolyte cram." He illustrated in an original and striking way what he thinks would be the inevitable result of centralisation, by referring to the dead and motionless uniformity which must be the result of the degradation of energy. Prof. Tait drew a ludicrous yet melancholy picture of what would be the results of universal uniformity in the social world.

"The application of these ideas," he said, "to political and social questions, among which of course comes University centralisation, is not far to seek. What would the world of men be without what we may call 'social entropy'? Everyone would then be his own farmer, baker, butcher, brewer, banker, boot-black, &c.—all would be at the same dead level—no possible help from one to his neighbour, even if it could be required; no distribution of tasks, and therefore (in every department) that endless waste which is inevitable in operations conducted on a petty scale. No possibility of that mutual reliance and assistance which forms the friendships we delight in, none of that variety which is the real charm of life—no idea which would not simultaneously strike every unit of the race—no news, no books—nothing but sameness! None of the pleasure of being able to assist struggling worth, none of gratitude for generous aid. Nay, we might pursue it further. No difference of temper, character, tendencies, age, sex—a state lower than the lowest known in vegetation; but here the end must come. Or, to take a somewhat different point of view (though the basis is absolutely the same, for oscillation implies entropy), what if everything were always at its average value? Never absolutely either fair or rainy weather, clear or cloudy, calm or stormy, hot or cold; but a dead average. Never either absolutely day or night; no tides, no seasons; men never either absolutely awake nor absolutely asleep—continually in a semi-lethargic state—half happy, half discontented; half playful, half serious—neither running, walking, standing, sitting, nor lying, but a perpetual average. No catastrophes such as a birth, a marriage, or a death—no distinction between man and man—nothing of that variety which is the law of nature. Eternal, hideous, intolerable sameness, by necessity devoid of all capacity for action: the human race turned into a set of Nürnberg toy-solders, all cast in the same mould, of the same base material, and all similarly bedaubed from the same glaring paint-pots, and moving on the same lazy-tongs with the same relative velocities. No one to advise you in a difficulty, no one in whose superior strength of mind or body you could confide; nothing around you except what you feel must be but the image of yourself (as you will early have learned introspectively to look at it)—mean, sordid, and grovelling! No one whom you can respect, none to trust—all, like yourself, vile and despicable! Here I would gladly say—'Enough of such horrors,' and quit the disgusting theme. But, unfortunately, the application has still to come. It will be found very pertinent to many things which have been of late evolved from the innermost consciousness of statecraft, and hailed, with altogether inexplicable delight, by what seemed (till lately) to be at least a numerical majority of the representatives of our countrymen."

Prof. Tait then referred to the late Prof. Forbes and the recent discussion concerning his character and work. For what Prof. Tait has to say on this subject we must refer our readers to his address, which is printed in full in the *Scotsman* of the 23rd inst. He then spoke of the scheme for extending Edinburgh University, and the facilities which would thereby be acquired for teaching Science practically, as it ought to be taught, and thus tend to extinguish "paper-science," a term which "conveys to all who are really scientific men an impression of the most unutterable contempt." In conclusion, Prof. Tait referred to the difficulties attending the work of his

own class, that of "Natural Philosophy," arising from the want of adequate means. He hopes to be able, at least, to put the Natural Philosophy Department in Edinburgh University on a proper footing for his successor.

THE SOIRÉE OF THE ROYAL SOCIETY

ON Wednesday, April 22, the first soirée of the Royal Society since their removal into their new apartments was given by the President, Dr. Hooker, and came off with the greatest *éclat*. There was a remarkably good display of scientific apparatus, and we think that the interdependence of the man of Science and of the manufacturer of instruments is at no time better exemplified than on occasions like the present. The apartments devoted to the purposes of exhibition were thronged by the most eminent in the various branches of Science—it might have been said with reason that a considerable fraction of the nation's mind had centred for the time being in the rooms at Burlington House. Not as an unhealthy sign either did we regard the presence of Archbishop Manning and the attention shown towards that divine by scientific men of the very opposite poles of thought.

Of the objects of interest displayed in the six rooms devoted to this purpose we can here only give details of the more prominent. In the first room several maps and photographs were exhibited by the Royal Geographical Society; also some splendid pieces of glass-work by Messrs. Chance, consisting of a dioptric fixed light (4th order) with nine prisms and six rings of lenses in four panels, a segment of a dioptric totally reflecting mirror first proposed by Mr. Thomas Stevenson, C.E., a dioptric holo-photo designed by the same engineer, and a lamp-burner designed by Mr. J. N. Douglass, C.E., with six concentric wicks. This burner can be used either for colza oil or for petroleum. The President exhibited also in this room some interesting objects from the Kew Museum. Amongst these we noticed some fossil copal gums from Zanzibar, carved cocoa-nut shells from the Fiji Islands, a vase made from the ash of *Moguilea utilis*, mixed with clay, from Pará, and different chemical and medical products from species of *Eucalyptus*.

In the second room Mr. Crookes exhibited his experiments showing the attraction and repulsion accompanying radiation. The pendulum described by Mr. Crookes in his communication to the Society was exhibited under various forms, and the experiments excited the liveliest interest. Here also Dr. C. J. B. Williams exhibited some new ear-trumpets, and Messrs. Whitehouse and Latimer Clark an electrical recorder for registering time, speed, distance, and number of passengers inside and out in tram-cars and omnibuses. This information is registered in four parallel columns in red ink on long strips of paper, by automatic pens.—Mr. Vernon Heath exhibited some autotype landscapes, and the president some Tappa dresses from Fiji, which reminded us strongly of the ornaments placed in our fire-stoves during the summer. Here also we were shown a microscope by Messrs. Powell and Lealand, with a $\frac{5}{60}$ immersion objective and the eternal Podura scale.

In the third room, the Entrance Saloon, were some exquisitely coloured drawings of the flora of Brazil, and landscapes by Miss North; likewise some coloured drawings of New Zealand birds, exhibited by Dr. W. Lawry Buller. The pair of new Paradise Birds collected by Signor D'Abertis* in New Guinea, promised by Dr. Sclater, was not exhibited.

In the fourth room, the Reading Room, Dr. Tyndall exhibited the apparatus (already described in our columns) for showing the stoppage of sound by a non-homogeneous mixture of air and vapours, and also experiments illus-

* See NATURE, vol. viii. p. 505.

trating Savart's observations on the action of sound on a jet of water. Dr. J. H. Gladstone exhibited some photographs of fluorescent substances. Bottles containing fluorescent liquids, such as *æsculin* or quinine di-sulphate, appear in the photographs nearly as black as a bottle filled with ink; similarly, labels written with such liquids, although the characters are ordinarily invisible to the eye, show up their designs when photographed. In this room were to be seen also photographs of the Naples Aquarium, exhibited by Mr. W. A. Lloyd, and one of Dr. Dohrn's Zoological Station at Naples, lent by Mr. Darwin; likewise some lithographed plates of recent Foraminifera from the Abrolhos Bank, exhibited by Profs. W. K. Parker and Rupert Jones. Mr. J. Norman Lockyer exhibited a series of photographs of metallic and solar spectra enlarged by Messrs. Negretti and Zambra from photographs taken by his new method of comparing spectra by means of a perforated shutter sliding in front of the slit of the spectroscope. In this room the new sextant devised by Capt. J. E. Davis was exhibited. This instrument, which will be found particularly useful in night observations, permits the taking of a series of observations without reading off each observation; this being accomplished by the adaptation of a micrometer movement to the tangent-screw, and the application of indicators to the arc of the instrument. Mr. Alfred Tribe here exhibited some specimens of metals (palladium, copper, &c.) which had become agglomerated in a most remarkable manner by hydrogenisation; under ordinary circumstances the metals shown existed in the form of fine powders, but, as soon as charged with hydrogen, become agglomerated.

The fifth room, or Principal Library, is by far the largest apartment of the suite. Mr. C. V. Walker's electrical apparatus for carrying out the "block system," or "space intervals," between trains on the South-Eastern Railway, was here displayed. Messrs. Tisley and Spiller exhibited their compound pendulum apparatus in action, and distributed cards with the exquisite curves described upon them. This firm exhibited also the beautiful triple combination double-image prism belonging to Mr. Spottiswoode. Mr. E. B. Tylor's ingenious apparatus for illustrating refraction (already described in these columns) was exhibited in this room.* We observed also some splendid gold crystals exhibited by Mr. W. C. Roberts, Chemist to the Mint; Mr. W. H. Barlow's "Logograph," a recording instrument for showing the pneumatic action accompanying the exercise of the human voice; and a pair of gyrostals exhibited by Prof. Sir William Thomson. Messrs. Negretti and Zambra exhibited their ingenious thermometer for recording deep-sea and atmospheric temperatures, already described in NATURE. Mr. John Browning exhibited a good collection of apparatus. Mr. G. P. Bidder's micrometer, a most ingenious device for observing the transit of very faint stars, in which the spider lines, capable of the usual micrometer movements, are illuminated by a side light, and are reflected into the eye-piece by a mirror, thus appearing bright upon a dark ground, and by interposing coloured glasses between the lamp and the spider lines can be coloured at pleasure. Sir Charles Wheatstone's new photometer is well worthy of notice: the screen slides along the divided scale and its motion causes the increased overlapping of two sliding wedges of neutral-tint glass. The light is looked at directly through a hole in the screen, and the latter moved along the scale till the light just ceases to be visible. We noticed also a micro-spectroscope of very good definition, showing the absorption spectrum of cantharides. Mr. Apps exhibited a model and diagram of a fireproof building, and a model of an improved apparatus for indicating the speed of revolving shafts, both being the inventions of Sir David Salomons.

* We should recommend lecturers using this apparatus to see that the wood is well seasoned; the one exhibited soon ceased to act satisfactorily, owing to the warping of the board.

The plan for rendering buildings fireproof consists in laying on water-pipes between the walls and floors of the building, these pipes being self-acting by means of fusible-metal plugs or electrical communications. The last-named model is an application of the ordinary governor balls, which are connected with the shaft, and by a system of levers, with an index, which moves up a graduated scale. A double-action spectroscope with a divided object-glass, made by Grubb, of Dublin, was shown and explained by Lord Lindsay; this instrument is intended by its owner to be attached to a large equatorial for the observation of stellar spectra. Among other noticeable things in this room we may mention the Megohm, one million British Association units, by Messrs. Elliott Brothers; Mr. George Barnard's highly artistic water-colour drawings and the copies of sacred Icons of the Greek Church in Russia, and photographs by Mr. John Leighton. Col. Stuart Wortley's photographs from life are high examples of art, and the group of living corals (*Astroides calicula*) from the Bay of Naples, exhibited by the Crystal Palace Aquarium Company, attracted large numbers of admirers by their beauty. At 10 o'clock Dr. R. Norris, of Birmingham, exhibited in the meeting-room experiments to illustrate a form of contractive energy which displays itself in various substances. Among other things the Doctor showed that the statement that india-rubber contracts by heat is incorrect; this substance, it is true, contracts in the direction of its length, but it expands in breadth at the same time, thus resembling the so-called contraction of muscular fibre.

In soirées of this kind experiments illustrative of new chemical discoveries are generally "conspicuous by their absence." This surely cannot be due to the fact that the science does not permit of public demonstration; it arises rather from the "messy" nature of the materials employed by chemists, thus precluding the introduction of chemicals into such rooms as are devoted by the Society to their gatherings. We are of opinion that in not fitting up and adding to their now noble apartments a laboratory, an omission has been made which may be regretted in the future.

THE LECTURES AT THE ZOOLOGICAL SOCIETY'S GARDENS

II.

IN the second and third of his lectures On the Geographical Distribution of the Mammalia, delivered on the Tuesday and Friday of last week, Mr. Sclater described in detail the ranges of the different orders of terrestrial mammals; and to avoid unnecessary repetition, employed the well-known system of division of the earth's surface, proposed before the Linnean Society in 1857, from a study of the bird class, according to which there are six regions—(1) The *Palaearctic*, including Europe, Africa north of the Atlas Mountains, and Northern Asia. (2) The *Ethiopian*, including all Africa south of the Atlas Mountains, and the southern part of Arabia. (3) The *Indian*, including Asia south of the Himalayas, Southern China, and the Indian Archipelago. (4) The *Australian*, including Australasia. (5) The *Nearctic*, including North America down to the centre of Mexico; and (6) The *Neotropical*, including South and Central America. The following is a summary of his remarks.

Among the monkeys the anthropoid apes inhabit equatorial Africa, where the gorilla and chimpanzee are found; Sumatra and Borneo are the home of the orang outang; while the eastern portion of India, Burmah, and the Indian Archipelago constitute the habitat of the various species of gibbon. The catarrhine monkeys, including the green monkeys (*Cercopithecini*), and the macaques inhabit Africa and India respectively; the latter, however, extending into Africa north of the Sahara, as far as Apes Hill and the Rock of Gibraltar. The platyrrhine monkeys, among