Drift have been coloured tell us, as a rule, a very different tale from the corresponding sheets in which the Drift is ignored, and it is only these Drift maps that really give us a true idea of the nature of the surface. Indeed in many districts a geological map that does not show the Drift is comparatively useless for most practical purposes, at all events in a populous country like England. Moreover, it is not merely enough to mass Drift as such, but its constituent members should be fairly distinguished, not merely with regard to their classification or relative age, but also as to their composition, whether of clay, loam, or gravel and sand. To illustrate this there are exhibited copies of the two versions of many of the Geological Survey maps of the London Basin, with and without Drift, from which the following important points will be at once seen:—(1) Large tracts, shown as Chalk on one version, really consist, at the surface, of the generally impervious Boulder Clay, whilst over others the Chalk is covered by Brick-earth and Clay-with-flints: all these beds being such as give an aspect to the country very different to what we find where the Chalk is bare. (2) Parts of the wide-spreading area of the London Clay (of the Driftless maps) are really quite altered and deprived of their clayey character, by the sheets, long strips, and more isolated patches of gravel and sand that occur so often, whether along the river-valleys or over the higher plains. (3) The sandy, permeable Crags are in great part hidden by Drift, which, though often consisting of sand and gravel, is sometimes of Boulder Clay. Indeed, so widespread is the Glacial Drift in the greater part of Norfolk and Suffolk, that only a Drift edition of the Geological Survey maps of the eastern parts of those counties has been issued; a map without Drift would necessarily be a work of fiction. To illustrate the important bearing which these Drift maps have on a great question, that of water-supply from the Chalk, the author also exhibits some special maps, which he has made to show the areas over which rain-water has access to the Chalk, as distinguished from those over which the surface-water cannot sink down into the Chalk, or can only do so very partially. These maps will be more particularly noticed in Section G.

*Pennsylvania before and after the Elevation of the Appalachian Mountains*, by Prof. E. W. Claypole, B.A., B.Sc., F.G.S. Lond.—The paper, of which the following notes are an abstract, is intended as an attempt to handle, in a necessarily imperfect manner, and only to first approximations, a difficult but important and interesting geological subject. The method of treatment is, in the writer's opinion, one that has not hitherto been employed for the same purpose. The object in view is to form some estimate, as near to the truth as possible, of the amount of compression or shortening produced at the surface by the corrugation of the upper layers of the coast into mountain chains, with especial reference to the American Atlantic seaboard. In order to confine the paper within due limits, certain propositions must be taken as proved. The principal of these are:—(1) That central contraction has developed tangential pressure in the crust; (2) that the tangential pressure has produced crumpling of the crust; (3) that to this crumpling are due long ranges of mountains; (4) that the Appalachian Mountains came into being in this manner in the later portion of the Palæozoic era. These admitted, the conclusion necessarily follows that during the formation of the Appalachian Mountains a considerable contraction of the crumpled area ensued, in a direction at right angles to that of the chain. The following points constitute the main features of the paper:—(1) Short account of the great ranges of Pennsylvania, in plan and section, with diagrams; (2) situation and account of the line of section adopted; (3) limitation of the field to a consideration of eleven great ranges—Blue Mountains, Bower Mountains, Conecocheague Mountains, Tuscarora Mountains, W. Shade Mountains, Black Log Mountains, Blue Ridge Mountains, Jack's Mountain, Standing Stone Mountains, Tussey Mountains, Bald Eagle Mountains; (4) Discussion of the different parts of this section—(*a*) the Mountain Region, (*b*) the Cumberland Valley; (5) attempt to estimate or measure the curved line of the crumpled Upper Silurian (Medina) sandstone; (6) inference that the sixty-five miles of the line of section represents about 100 miles of surface previously to the crumpling of the crust and elevation of the mountains; (7) this result, for several reasons, below rather than above the truth; (8) geographical effects of this contraction; (9) development of the fact that such elevation of mountains by tangential pressure involves not only elevation, but considerable horizontal movement; (10) diminution of motion to north-west; (11) a few words on the failure of attempts yet made to account for this contraction; (12) suggestions and conclusions.

## UNIVERSITY AND EDUCATIONAL INTELLIGENCE

AT King's College Prof. W. Grylls Adams, F.R.S., will deliver a course of lectures on Electricity and Magnetism and their applications to Electric Lighting, Transmission of Power, &c., during the academical year 1884-5. A course of practical work in electrical testing and measurement, with especial reference to electrical engineering will also be carried on under his direction in the Wheatstone Laboratory. The lectures will be given once a week—on Mondays at 2 p.m.—and the Laboratory will be open on Wednesdays and Fridays from 1 to 4.

## SOCIETIES AND ACADEMIES

### PARIS

**Academy of Sciences**, September 15.—M. Rolland, President, in the chair.—Address delivered at the inauguration of the Fresnel Monument at Broglie, by M. Jamin.—Remarks on algebraic equations, in connection with a communication from M. de Jonquières on the application of geometry to algebra, by M. Léon Lalanne.—Note on the two methods, proposed by Hamilton and Sylvester, for resolving the linear equation in quaternions, by Prof. Sylvester.—On the composition and properties of the light emitted by insects of the Pyrophore genus, by MM. Aubert and Raph. Dubois. Examined under the spectroscope, the spectrum of this light appeared very beautiful, continuous, and destitute alike of very bright and dark bands. It occupied about seventy-five divisions of the micrometer, extending on the red side to the centre of the interval separating the A and B rays of the solar spectrum, and on the side of the blue a little beyond the F ray. When its intensity diminishes, the red and orange disappear altogether, the spectrum being then reduced to the green with a little yellow and red, the green persisting longest. The reverse takes place when the insect begins to glow. Thus the least refrangible rays are the last to be emitted, a result hitherto observed in the spectrum of no other luminous body, except to a limited extent in that of the sulphide of strontium. Examined to ascertain its photo-chemical properties, this light showed a feeble display of the phosphorescence of the sulphide of calcium.—Remarks on a singular case of deformation in the images observed through telescopes, by M. Govi.

### BERLIN

**Physiological Society**, August 1.—Dr. A. Auerbach had made experiments to ascertain which of the constituents of flesh exercised the acid, alkali-abstracting effect on the blood witnessed in the reaction of the urine of flesh-eating animals compared with that of the urine of plant-eating animals. He found that the acid phosphoric potash increased the ammoniacal contents of the urine in a manner similar to that of the administration of acids. A dog fed on flesh having been brought into nitrogenous equilibrium, and kept in this state for some days, had a portion of acid phosphoric potash given to it in addition to the meat. The nitrogenous excretion remained the same as before, but the quantity of secreted ammonia had considerably increased, and this increase continued for some days after the dog was put back to the former flesh diet without the salt. The quantity of secreted ammonia corresponded, to the utmost nicety, with the quantity necessary for the conversion of the salts which had been taken, $PO_4KHH$, into $PO_4KNO_4H$.—Prof. Kronecker gave a report of a series of experiments conducted during the session now ended in the department of the Physiological Institute under his care. He first recounted the experiments of Mrs. Dr. Boll, who investigated whether asphyxiated fishes could recover animation without a supply of oxygen, and simply by withdrawing the carbonic acid from them. Goldfishes were left in boiled water free of air till the symptoms of asphyxia became distinctly manifest, and then a somewhat diluted caustic lye was added to the water without the admission of air. In every such case the fishes soon recovered their lively movements, and swam about freely in the water. It might therefore be concluded that, with the discharge of the surplus of carbonic acid, the symptoms of asphyxia would also disappear.—Prof. Kronecker then reported on the experiments of Dr. Kranzfeld, which had for their subject the movements of the stomach. In the stomach of each of the animals examined, the cardiac part, the pyloric part, and the middle had to be discriminated. Of these three parts the last was in most cases immovable, while the two other parts displayed lively movements. In the act of

swallowing, as observation proved, the stomach took no share. The cardiac and the pyloric parts were excitable in different manners. The pylorus reacted strongly even on slow electric stimulations of moderate intensity such as failed to induce any contraction in the cardiac part. Contraction of the cardiac part followed however more frequent stimulations. The act of vomiting, at least in all the animals examined, was constantly brought about by a swallowing movement. In the discharge of the contents of the stomach, on the other hand, the œsophagus took no part whatever. The motors at work were the abdominal pressure and the movements of the gastric walls, and during the time the vomiting lasted the cardiac orifice was open. The whole mechanism of the act of vomiting was still, however, the subject of investigation. —Dr. Jastreboff has made a particular investigation of the question, important in practice, regarding the effect on the blood-pressure of interference with different parts in the case of operations in the peritoneal cavity. He found that the blood-pressure was raised by all encroachments of this kind, especially that of impinging on the intestine, and, most strongly of all, by a refrigeration of the intestine. In the case of a quick excision of a warm tumour from the peritoneal cavity the blood-pressure rose to quite a rapid rate, and the influence of ether was only able somewhat to abate it.—In continuation of former experiments on the movements of the vagina, Prof. Kronecker has further established that they are not peristaltic movements like those of the intestine, but that the vagina contracts, exactly in the same manner as does the œsophagus, in sections which in definite numbers (mostly three) and in definite series compress themselves from the top downwards. A solution of continuity in the wall of the organ in no respect affected the course of the contraction.—Dr. Ratimoff has studied the effect of chloroform on the heart and the respiration. In order to charge the air with the vapour of chloroform a special apparatus was constructed which allowed an exact registration of the chloroform. Air completely saturated with chloroform contained in every case, whether the process of interfusion took place slowly or rapidly, 30 cubic centimetres of chloroform to 100 litres of air, and invariably caused the death of the rabbits subjected to it, and that through paralysis of the heart. Such a mixture as produced a complete narcosis of the animal, without affecting the heart or the respiration, contained 5·6 or 7 cubic centimetres of chloroform to 100 litres of air, a mixture which was able to maintain the narcosis for hours at a time. In these experiments, however, it appeared that the animals very soon got accustomed to the chloroform, and if, for example, the narcosis was effected at the beginning by a proportion of 5 cubic centimetres of chloroform, the dose had subsequently to be increased to 6 and 6½ cubic centimetres in order to keep up the narcosis.—Dr. Schapiro has investigated the effect of atropine on the frog's heart, and has found it analogous to the effect of heat. The heart became through its application much more accessible to external treatment than in a normal state, and in general its effect may be formulated in the statement that by means of atropine the fissures in the frog's heart become widened. —Mr. Aronsohn had formerly found that 0·73 per cent. solution of ordinary salt was of altogether indifferent and unstimulating effect on the nasal mucous membrane, and offered the best vehicle for the introduction of smelling substances. He now communicated that he had examined other salts, in particular carbonate of soda, sulphate of soda, sulphate of magnesia, &c., with a view to determining in what concentration they affected the nasal mucous membrane with equal indifference as did 0·73 common salt solution. He found that for this purpose much more considerable quantities of these salts were required. In the case of sulphate of soda, for example, four times the quantity that sufficed in the case of common salt was needed to produce the same absence of effect. In such stronger concentrations these solutions might take the place, either in whole or in part, of the kitchen salt solution.—Dr. Heimann reported on a new method for the production of localised pressure on the cerebrum. He placed an animal at the periphery of a round chest made to revolve round its centre, caused it to rotate 300 times a minute, and observed paralytic symptoms which passed away in a short time after the end of the rotation. By experiments he convinced himself that the change in the distribution of the blood in the two halves of the brain produced by the centrifugal force was without influence in this phenomenon, and therefore concluded that it was exclusively the one-sided pressure of the brain against the skull which caused the paralysis. To still further localise this pressure he trepanned the skull at a spot where it was known that the part of the membrane of the cerebrum there situated was the centre for the movements of an extremity, fixed into the opening a cork stopper, which of itself exercised no pressure, and placed the animal in such a posture in the rotating apparatus that the operated side was situated outwardly. In the rotation the spot in question was now pressed against the cork, and so paralysis showed itself in the extremity appertaining to that spot. On the cessation of the revolution the movement of the paralysed part was soon restored. These experiments could be repeated at pleasure without doing any harm to the animal.

VIENNA

**Imperial Academy of Sciences**, July 17.—K. Laker, on the first microscopic phenomena of coagulation of mammalian blood.—A. Weiss, on a peculiar occurrence of calcium oxalates in the epidermis of the organs of some Acanthaceæ.—On spontaneous movements of vegetable dyeing bodies, by the same.—Preliminary note on a peculiar solved yellow dye in the flowers of some Papaveraceæ, by the same.—L. Boltzmann, on the properties of monocyclic systems and of other systems allied with them.—H. List, on the epithelium of the cloaca of *Scyllium canicula*.—K. Zulkowsky and K. Lepéz, aid to the determination of the halogens of organic bodies. —R. Benedikt and P. Julius, on a new resorcin-blue.—A Nalepa, on the anatomy of Tyroglypha.—O. W. Fischer, contribution to a knowledge of diquinolyles.—On two organic stannum compounds, by the same.—T. Habermann, on some basic salts.—F. Berger, on the action of acetamide in phenylcyanide.—S. Schubert, on the behaviour of the starch-granule if heated.—G. Spitz, on some mixed ethers of resorcin.—K. Natterer, contribution to a knowledge of dichloro-ether.—K. Auer von Welsbach, on rare earths.—Z. H. Skraup and O. W. Fischer, on methyl-phenantroline.—Z. H. Skraup, on a new mode of formation of phenantroline.—L. Szajnocha, contribution to a knowledge of the middle Cretaceous Cephalopod fauna of Elobi Island on the western coast of Africa.—K. Auer von Welsbach, contributions to spectral analysis.—E. von Fleischl, on double refraction of circumpolarising fluids.—E. Steinach, studies on the renal circulation of the blood.

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