b 6 there was a loss of $\frac{1}{10}$ of a milligramme; in *b* 7 a loss of $\frac{2}{10}$ of a milligramme only at the second weighing. This is an absolute proof that there could be no sensible occlusion of any tartaric acid or any tartrate by these precipitates, and, as stated in our original paper, the same test was frequently applied, although not always in our previous determinations. It is also evident that these last experiments give us two essentially distinct determinations of the atomic weight, although the materials employed were identical with those of *b* 4 and *b* 5.

Wt. of Sb Br_3 taken.	Wt. of AgBr determined.	Per cent. of bromine Ag=108 Br=80.	Corresponding value of Sb.
b 6. 3·3053	5·1782	66·665	120·01
b 7. 2·7495	4·3076	66·667	120·00
Mean value		66·666	120·00

Lastly, it is obvious that these gravimetric determinations, taken in connection with the corresponding volumetric results, give us the most conclusive evidence of the purity, both of the metallic silver used, and also of the bromine in the bromide of antimony, which is the basis of this atomic weight investigation. By comparing *b* 6 and *b* 7 with *b* 4 and *b* 5 respectively, we obtain the following data:—

1. 2·9749 gram. of silver gave 5·1782 gram. bromide of silver.
2. 2·4745 „ „ 4·3076 „ „

Hence it follows that, as shown by these experiments, the proportions of the silver to the bromine were respectively:—

1.	108·00 Silver to	79·99 Bromine.	
2.	108·00 „	80·01 „	
Mean value	108·00 „	80·00 „	

This is the ratio of the atomic weight of silver to that of bromine, and corresponds to the second decimal place with the determinations of Stas as well as with those of Dumas.

In conclusion it gives us pleasure to express our obligations to Mr. G. De N. Hough and Mr. G. M. Hyams, two students of this laboratory, who have greatly aided us in the experimental work of this investigation.

SOCIETIES AND ACADEMIES

London

Royal Society, March 11.—"Report on the Fossil Flora of Alum Bay," by Baron Ettingshausen. The materials upon which the report is based were stated to be in the British Museum, Museum of Practical Geology, Woodwardian Museum, and in Mr. J. S. Gardner's collections. The fossil flora of Alum Bay contains, according to the author, about 116 genera and 274 species belonging to 63 families. Of these genera 3 are said to be Thallophyta, 2 Filices, 5 Gymnospermæ, 6 Monocotyledons, 28 Apetalæ, 15 Gamopetalæ, 54 Dialypetalæ, and 2 indeterminable. A number of genera are enumerated which the author supposes to be common to Alum Bay and Sheppey, and hence he infers, as Heer did, that there is a close connection between the two floras. The small number of ferns and palms in comparison with the much greater number at Bournemouth and of palms at Sheppy is remarkable. Many of the dicotyledons are stated to show a genetic connection with miocene species, and a great number of the latter are seen to have originated as far back as the eocene. On the other hand some of the miocene genera were not completely differentiated into genera in the eocene period. Two examples are given: Castanea, which although perfectly developed in the miocene, is said to be only represented in the eocene by a castanea-like oak, uniting characters now distinctive of the two genera, and a Pomaderris-like Rhamnus, also seeming to unite two genera which were quite distinct from each other in the miocene.

More than fifty of the species from Alum Bay are common to Sotzka and Hæring, while a lesser number are common to Sézanne, the Lignitic of America, and to other floras. The paper includes a list of species.

In the discussion Dr. Carruthers could not quite agree with determinations which brought together plants from all parts of the globe. Mr. Mitchell questioned the utility of giving specific names to plant remains that are neither described nor figured, especially when no nearer approximation to their position can be made than is indicated by the terms Carpolithes and Phyllites. Mr. Gardner explained the position of the leaf-bed at Alum Bay, stating it to be a small vertical clay basin, similar to those found in a horizontal position near Bournemouth; and hence he did not consider it remarkable that the flora from Alum Bay should appear restricted (as indicated by the paucity of palms and ferns) by comparison with the Bournemouth flora, which has been obtained from a series of basins extending for several miles.

Chemical Society, March 30.—Anniversary meeting.—Mr. Warren De la Rue, president, in the chair. The president, in his annual address, contrasted the condition of the Society during the past year with its position in 1869. The number of Fellows has increased from 522 to 1,034, the income from 1,100*l.* to 2,700*l.*; papers read from 31 to 75. A rapid glance was then taken of the recent progress of chemistry, especial reference being made to the decomposition of the elements chlorine, bromine, &c., by Meyer; the photographs of the whole of the spectrum recently made by Capt. Abney; the artificial production of the diamond by Hannay; the synthesis of vegetable colouring matters and alkaloids; the discovery of a new element, scandium, &c. The officers for the ensuing year were then balloted for; the following were elected:—President—H. E. Roscoe. Vice-presidents—F. A. Abel, C.B., B. C. Brodie, Warren De la Rue, E. Frankland, J. H. Gladstone, A. W. Hofmann, W. Odling, Lyon Playfair, A. W. Williamson, J. Dewar, J. H. Gilbert, N. S. Maskelyne, V. Harcourt, R. Angus Smith, J. Young. Secretaries—W. H. Perkin, H. E. Armstrong. Foreign Secretary—Hugo Müller. Treasurer—W. J. Russell. Other members of council—M. Carteighe, C. Graham, C. W. Heaton, H. McLeod, E. J. Mills, J. M. Thomson, W. C. Roberts, W. A. Tilden, W. Thorp, T. E. Thorpe, J. L. Thudichum, R. Warington.

Anthropological Institute, March 23.—Edward B. Tylor, F.R.S., president, in the chair.—A paper by Mr. V. Ball, M.A., F.G.S., on Nicobarese ideographs was read. As the Andamanese may be said to have not progressed in civilisation beyond that stage which was represented by the people of the early stone periods in Europe, so the Nicobarese, who are much less savage and degraded than their neighbours of the Andamans, may justly be compared with the inhabitants of the "bronze period." The example of Nicobarese picture-writing described by the author was obtained in the year 1873 on the island of Kondul, where it was hanging in the house of a man who was said to have died a short time previously; it is now in the Museum of Science and Art at Dublin. The material of which it is made is either the glume of a bamboo or the spathe of a palm which has been flattened out and framed with split bamboos. It is about three feet long by eighteen inches broad. The objects are painted with vermilion, their outlines being surrounded with punctures which allow the light to pass through. Suspended from the frame are some cocoanuts and fragments of hog's flesh. The figures of the sun, moon, and stars occupy prominent positions. Attention was directed to M. Maclay's description of a Papuan ideograph which symbolised the various guests present at a feast given in celebration of the launch of two large canoes (*vide* NATURE, vol. xxi. p. 227).—Mr. Alfred Tylor read a paper on a new method of expressing the law of specific changes and typical differences of species and genera in the organic world, and especially the cause of the particular form of man. The lower animals have no abstract ideas, and therefore all they can know must be derived from objects. Their reproduction of specific form and decoration seems to prove that they possess a mental power of appreciating the niceties of form and colour in a very high degree The forms and decorations of organised beings seem to be regulated by laws which the author provisionally called *emphasis* and *symmetry*. Emphasis was defined as the marking out by form or decoration of the important parts or organs. The law of emphasis, as applied to human work, was illustrated by the structure of a Greek temple, in which all the parts have their functions expressed or emphasised by ornament. It is a remarkable fact, and one that can scarcely be accidental, that just as animals fall naturally into two great classes, the *vertebrata* and *invertebrata*, so the emphasised functional decorations group themselves into two classes, and these two classes are identical with the vertebrata and the invertebrata. In the vertebrata the emphasised ornamentation is what we may call axial, being the outward expression of the central axis or vertebral column with its appendages; and in the invertebrata the decoration tends to follow the outline of the animal, and so develops borders. It has always excited wonder that the child—a separate individual—should inherit and reproduce the characters of its parents and indeed of its ancestors, but if we remember that the great law of all living matter is that the child is *not* a separate individual, but a part of the living body of the parent, up to a certain date, when it assumes a separate existence, then we can comprehend how living beings inherit ancestral characters, for they are parts of one continuous series in which not a single break has existed or can ever take place. Just as the wave-form over a pebble in a stream remains constant, though the particles of water which compose it are ever changing, so the wave-form of life, which is heredity, remains constant, though the bodies which exhibit it are continually changing. Mr. Tylor's paper was illustrated by a large number of diagrams.

Royal Microscopical Society, March 10.—Dr. Beale, F.R.S., president, in the chair. Fifteen gentlemen were nominated or elected Fellows.—Mr. Beck exhibited an improved form of microscope with swinging sub-stage; Mr. Mayall a new traverse lens, by Mr. Tolles; Mr. Dunning a new form of turntable; Dr. H. Gibbes a $\frac{1}{12}$-homogeneous immersion objective for use with the binocular; and Mr. Crisp Klönne and Müller's demonstration microscope and a specimen of micrometric ruling by Prof. Rogers, of Harvard, U.S.—Mr. James Smith described his method of illumination for high powers —The following papers were read:—On a sponge parasitic within *Carpenteria raphidodendron*, by Prof. Martin Duncan, F.R.S.—On a petrographical microscope, by M. Nachets.—On double and treble staining of animal tissues, by Dr. H. Gibbes.—On *Podophyra quadripartita*, by Mr. Badcock.

Institution of Civil Engineers, March 23.—Mr. W. H. Barlow, F.R.S., president, in the chair.—The paper read was on explosive agents applied to industrial purposes, by Prof. Abel, C.B., F.R.S.

Edinburgh

Royal Society, March 15.—Lord Moncrieff, president, in the chair.—By request of the Council, Lieut. Conder, of the Royal Engineers, gave an interesting and detailed lecture on the topography of Jerusalem.—Dr. James Geikie presented a communication on the geology of the Farö Islands, which he had visited last summer in company with Mr. Amund Hellend, of Christiania. In the absence of the author, the paper was read by Prof. Geikie. It was divided into two portions, the first treating of the more purely geological characteristics of the islands, which consist mainly of miocene volcanic formations intermingled with coal and clay deposits and attaining a thickness of from 10,000 to 12,000 feet; and the second part bearing particularly upon the evidences of glacier action. There were all the indications of prolonged glaciation, striæ, moraines, boulder-clay, &c.; but there was no evidence that this action was the result of a great ice-drift from the north. Everything indeed proved the glaciation to have been purely local.—Prof. Tait communicated a note on the colouring of maps. This he reduced to the problem of so lettering by the fewest possible symbols a number of points in a plane which have been joined two and two by non-intersecting lines so as to form three-sided areas, that no two connected points shall have the same name.

Paris

Academy of Sciences, March 29.—M. Ed. Becquerel in the chair.—The following papers were read:—Application of the theory of sines of superior orders to the integration of differential linear equations, by M. Villarceau.—On the determination of high temperatures, by MM. Sainte-Claire Deville and Troost. They describe an improved form of apparatus they used in 1863 (primarily for determining the expansion of porcelain) now simplified by use of a Sprengel *trompe*, by means of which may be removed and measured, whenever desirable, the thermometric matter (nitrogen) contained in the porcelain reservoir, and the temperature be calculated.—On the hypergeometric series of two variables, and on simultaneous differential linear equations with partial derivatives, by M. Appell.—On a class of functions of several variables drawn from inversion of integrals of solutions of differential linear equations, the coefficients of which are rational functions, by M. Fuchs.—On the manner in which frictions come into action in a fluid which departs from the state of rest, and on their effect in preventing the existence of a function of velocities, by M. Boussinesq —Memoir on integrations relative to the equilibrium of elasticity, by M. Mathieu.—Researches on diffusion, by M. Joulin. This first portion relates to condensation of various gases by porous bodies (charcoal, dry or saturated with liquid), the pressure being varied from a few centimetres to 4 atm., and the temperature from 0° to 100°. The absorbent was put in a glass tube which communicated (through tubes with cocks) with a manometric reservoir and a mercury pump. *Inter alia*, the saturation of dry charcoal with oxygen, nitrogen, or hydrogen is instantaneous, but with carbonic acid slow. Saturation with gaseous mixtures is slower than that with each of the constituent gases. Charcoal soaked with alcohol condenses much less than if soaked with water, and is saturated with gas much more slowly.—On a new property of vanadates, by M. Hautefeuille. Vanadates fused in contact with air rapidly take up a constant quantity of oxygen (bi-vanadate of lithia absorbs in a few minutes more than eight times its volume of this gas at a dark red, and liberates this gas at about 600° during crystallisation). Vanadates liberate *in vacuo*, in passing from the vitreous to the crystalline state, quantities of oxygen variable with the proportions of acid and base, and the nature of the base. This has a bearing on determination of equivalents.—On some properties of mixtures of cyanide of methyl with ordinary alcohol and with methylic alcohol, by MM. Vincent and Delachanal. The topics treated are the boiling points and densities of the mixtures, and a rational method of separating cyanide of methyl from ordinary alcohol.—Experiments showing that the anæsthesia due to certain lesions of the cerebro-rachidian centre may be replaced by hyperæsthesia under the influence of another lesion of that centre, by M. Brown-Sequard. Among other conclusions, the theory that the conductors of sensitive impressions of the limbs intercross in the spinal cord must be rejected; and one lateral half of the base of the brain may suffice for the transmission of sensitive impressions from both sides of the body.—Reflex effects of ligature of one pneumogastric on the heart after section of the opposite pneumogastric, by M. Francois-Franck. In this a retardation or arrest of the heart occurs, almost as notable as if the cut nerve had been intact; this effect is shown to be reflex. He studied the phenomenon in relation to time, with what he calls a *nevrotome à signal electrique*.—Contribution to the study of the transmission of tuberculosis, by M Toussaint. From experiments on pigs he infers that where tuberculosis occurs in those animals it is analogous to galloping consumption in man. The bovine species, on the other hand, which have tuberculosis much more often, have most often the chronic variety. Hence young pigs from tubercular parents soon die, and in adults which become tubercular the quick progress of the affection prevents reproduction. The facts also prove that tuberculosis is transmitted with the greatest facility (1) by ingestion of tubercular matters, (2) by heredity or lactation, (3) by inoculation with tubercular matter or blood, (4) by simple cohabitation.—On a mode of treatment of certain infantile cases of deafness or deaf-mutism, by M. Boucheron. The cases referred to are those arising from naso-pharyngeal catarrh, causing the mucus of the Eustachian tube to swell and stop the passage, the stirrup bone, ere long, being, through pressure of external air on the tympanum, made to press strongly on the liquid of the labyrinth, injuring the acoustic nerve. M. Boucheron chloroformises the child and practises catheterism, insufflation of air, and pharyngeal cauterisation with a brush dipped in iodine solution.

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