Memoranda showing the Quantities and Values of Copper and Nickel Ores exported from the Island of Newfoundland in the undermentioned Years

Years.	Parts cleared from.	Copper.	Nickel.	Value.	Value of nickel ore.
1854 to 1864	St. John's	Tons. 627½[1]	Tons.	Dollars. 22,980	Dollars.
1875 to 1879	,,	544½[1]		19,179	
	Total St. John's ...	1,172		42,159	
1869	Union Mine Tilt Cove	5,938	30	190,016	7,200
1870	,,	4,218	88	134,976	8,800
1871	,,	1,924	7	61,568	700
1872	,,	4,774[3]	8	152,768	25,60
1873	,,	5,414	233	189,490	9,320
1874	,,	4,346	—	104,304	—
1875	,,	4,838	17	179,006	1,360
1876	,,	6,464	28	232,704	2,800
1877	,,	5,389	—	194,004	—
1878	,,	4,450	—	97,966	—
1879	,,	1,964	—	35,352	—
	Total Tilt Cove ...	49,719	411	1,572,154	32,740
1875	Bett's Cove	6,280		232,360	
1876	,,	18,670		456,481	
1877	,,	42,065		1,093,768	
1878	,,	31,370		690,140	
1878	Regulus	750		34,500	
1879	,,	26,421½		475,587	
	Total Bett's Cove ...	125,556½		2,982,836	

The ores returned for 1878–79 were largely derived from Little Bay Mine and partly from Colchester, all belonging to the Bett's Cove Mining Company.

Thus the total value of the ores of copper and nickel exported since 1854 amounts to $4,629,889, or nearly £1,000,000 sterling.

ALEX. MURRAY

UNIVERSITY AND EDUCATIONAL INTELLIGENCE

CAMBRIDGE.—In Groups C and E of the Higher Local Examination this year there were respectively fifty-four and ninety-nine candidates; five obtained a first class in Group C (Mathematics) and eight a first class in Group E (Natural Science); nine candidates failed in Group C, and twenty-six failed in Group E. Three candidates answered the questions in Differential and Integral Calculus, and showed considerable knowledge. In botany a fair average of proficiency was attained; in geology the papers were below the average. In zoology inferior text-books had been too much preferred, to the exclusion very largely of practical work. The work in chemistry was unequal, but some candidates showed a very good acquaintance with the details of manipulation. Physics can scarcely be said as yet to be studied by the candidates. In physiology the answers were in some cases accurate and to the point, but the majority of candidates failed.

The elections to the Council of the Senate were made on Monday, and show in a very practical manner that residents are in favour of considerable improvement in University matters. Only one member who approves of the retention of Greek as a universal subject in the "Little-go" was elected, viz., Mr. G. F. Browne, whose place in the Council is due to his active work in connection with the University Local Examinations and his knowledge of the intentions of the University Commissioners, as one of their secretaries.

[1] Chiefly from Huronian rocks.
[2] Partly from openings in Notre Dame Bay.
[3] Cloanthite and Millarite.

Dr. Phear, Professors Cayley and Liveing, and Mr. Peile, are among those who were elected to the Council well known for their scientific eminence and breadth of view.

Prof. Stokes, Lord Rayleigh, and Mr. Vines were added to the Council of the Philosophical Society at its annual meeting.

Mr. Forbes, Prosector to the Zoological Society, has been elected to a Fellowship at St. John's College.

AT an examination held on Wednesday, October 27th ult., Mr. M. Milburn, of Longtoun, was elected to a vacant bursary in connection with the "Young" Chair of Technical Chemistry, Anderson's College, Glasgow. The bursary, which is of the value of 50*l.*, and tenable for three years, is the gift of Mr. James Young, LL.D., F.R.S., of Kelly and Dullis, founder of the Chair.

SCIENTIFIC SERIALS

Journal de Physique, October.—Experimental verification by S. Carnot, of the principle he discovered, by M. Lippmann.—Apparatus and experiments for elementary demonstration in optics, by M. Gariel.—Influence of velocity of propagation of sound in the shock of elastic bodies, by M. Elie.—New form of plates for air pumps, by M. Terquem.—*Proceedings* of the Physical Society of St. Petersburg (including papers, in abstract, on the chemical and photographic action of light, the transmission of the current in water with unequal platina electrodes, variations of volume and coefficient of elasticity of palladium and its alloys under the influence of absorbed hydrogen, &c.).

Rivista Scientifico-Industriale, No. 18, September 30.—On the relation between terrestrial storms and the planetary relations of the solar system, by Prof. Zenger.—Excursions (geological) in the neighbourhood of Modica, by Prof. Lancetta.—Palæontological studies in Bohemia, by Prof. Fritsch.—Beats, the third sound of Tartini, and the differential resultant sounds of Helmholtz, by Dr. Crotti.

No. 19, October 15.—New registering pluviometer, by S. Grimaldi.—New apparatus with petroleum heating, by S. Esser.—On a new variety (Rosterite) of Elban beryl, by Prof. Grattarola.

Kosmos, July 1880, contains a translation of Prof. Huxley's "The Coming of Age of the Origin of Species" (*vide* NATURE, vol. xxii. p. 1).—Dr. Ernst Krause's sketch of the developmental history of the History of Development.—Dr. H. Müller, the importance of Alpine flowers in connection with the "flower theory."—H. Schneider, observations on some apes.—Prof. Dr. Caspary, the conception of a soul and its significance in connection with modern psychology.—Short contributions and extracts from journals (among the short articles is one on the resemblance between flowers and fruit, by Hermann Müller, and on the occurrence of a five-toed example of *Archibuteo lagopus*, by W. von Reichenau).

August, 1880.—Dr. Oscar Schmidt, the severance of species and natural selection.—Dr. Ernst Krause, sketch of the developmental history of the History of Development, No 2.—Dr. Herman Müller, on the development of the colours of flowers.—Prof. A. H. Sayce, on the history of writing (translation).—Short contributions and extracts from journals.—Literature and critical notices.

Revue des Sciences Naturelles, September.—M. Mathias Duval, on the development of the spermatozoa in the frog (plates 3 and 4).—M. Lavocat, on the construction of the extremities of the limbs.—Dr. A. Godron, on the absence of a glume in the lateral spikelets of Lolium.—M. Leymerie, sketch of the Pyrenees of the Aude.—Notices of French memoirs on zoology, botany, and geology.—Bibliography and notice of the death of Dr. A. Godron.

SOCIETIES AND ACADEMIES

LONDON

Chemical Society, November 4.—Prof. H. E. Roscoe in the chair.—The following papers were read:—On the compounds of vanadium and sulphur, by E. W. E. Kay. The author shows that the products obtained by Berzelius are oxy-compounds, that the substance obtained by Berzelius in the dry way is a true trisulphide of vanadium V_2S_3; the disulphide and pentasulphide have also been prepared and are described in the present paper.—On the atmospheric oxidation of phosphorus and some reactions of ozone and peroxide of hydrogen, by C. T. Kingzett. The author concludes that in the above oxidation both ozone and peroxide of hydrogen are formed, the former

passes on in the current of air, the latter remains in the water in which the phosphorus is oxidised. In several experiments the proportion of peroxide of hydrogen to the ozone formed was as 1 to 2.—On the action of zinc ethyl on benzoylic cyanide, by E. Frankland and D. A. Louis. The product of this reaction, an amber-coloured jelly, was first decomposed and then extracted with alcohol, about 3 per cent. of a substance $C_{24}H_{19}NO_2$, named provisionally benzcyanidin, crystallising in colourless needles, was obtained. Besides this body an unstable substance was obtained which could not be purified, but which on oxidation with bichromate gave propiophenone $C_9H_{10}O$. —On the action of zinc-ethyl on cyanogen, by E. Frankland and C. C. Graham. The product of this reaction was a solid mass, which on heating to 120° yielded a colourless liquid which was propionitrile C_3H_5N., the other product of the reaction being zinc cyanide.—On bismuth and bismuth compounds, by M. M. P. Muir, G. B. Hoffmeister, and C. E. Robbs. The relative stabilities towards heat and reducing agents of the oxides, and towards heat of the hydrates are discussed, also the action of chlorine and bromine on the oxides. An attempt is made to give structural formulæ for these bodies, in which bismuth is trivalent.—On the colour-properties and relations of the metals copper, nickel, cobalt, iron, manganese, and chromium, by T. Bayley. The author has carefully compared the colours of solutions of salts of the above metals and various mixtures thereof, and especially those mixtures which yield colourless or neutral grey solutions.—Action of diazo-naphthalin on salicylic acid, by Percy Frankland.—On the basic sulphates of iron, by Spencer Pickering.—Fourth report on researches in chemical dynamics, by C. R. A. Wright, E. H. Rennie, and A. E. Menke.—On some naphthalin derivatives, by C. E. Armstrong and N. C. Graham.—On acetylorthoamidobenzoic acid, by P. P. Bedson and A. J. King.

VIENNA

Imperial Academy of Sciences, October 21.—On the propagation of ball and cylinder waves of finite width of vibration, by Dr. Tumlirz.—On the law of convulsive action (continued), by Prof. Stricker.—On the blood vessels of the valves of the heart, by Dr. Langer.—On the question of arrangement in the pyridin and chinolin series, by Dr. Skraup.—Experiments on the magnetic behaviour of iron, by Herr Haubner.—On the relation of the daily and yearly variation of temperature to the sun spot period, by Herr Liznar.

PARIS

Academy of Sciences, November 2.—M. Edm. Becquerel in the chair.—The following papers were read :—New observations on the etiology and prevention of *charbon*, by M. Pasteur. He gives a letter written by Baron von Seebach (Saxon Minister in Paris) to M. Tissandier in 1865, stating facts which afford striking confirmation of M. Pasteur's views as to the causes of the disease.—On the heat of formation of ethers formed by hydracids, by M. Berthelot. In these experiments he used his calorimetric detonator.—Heat of formation of sulphide of carbon, by M. Berthelot. The combustion of liquid sulphide of carbon liberates +246·6 cal. (Favre and Silbermann obtained 258·5 cal., but they overlooked the formation of sulphuric acid). Sulphide of carbon is formed with absorption of heat from its solid elements, but there is probably liberation of heat from gaseous sulphur and carbon.—On volcanic thunderstorms, by M. Faye. In paroxysmal eruptions the enormous amount of steam ejected causes volcanic thunderstorms, which are quite distinct from ordinary thunderstorms, especially in the absence of gyratory movements, the complete immobility of the volcanic storm (which is confined to the column of ascending clouds), and the fact that no flashes occur without the presence of ashes. The phenomena are very much those of the Armstrong electric machine. Further, there is never any mention of hail; and M. Faye thinks it is probably never produced, as it is the product of vast gyratory movements not found in volcanic clouds. He suggests the desirability of studying directly the traces of electricity in the vapours rising from the crater of Vesuvius.—On photographs of nebulæ, by M. Janssen. The photography of a very bright nebula is now comparatively easy, if one content oneself with the most luminous part, but extremely difficult if a complete image be sought comparable to those given by our large instruments. The latter is what we especially require, with a view to studying the important questions of variations of nebular structure, and calls for many able workers, furnished with the best instruments. M. Janssen is preparing observations of the kind at Meudon.—Observations of planets and comets, at Marseilles Observatory, by M. Stephan.—On the winter-egg of phylloxera, by M. Valery-Mayet. It seems certain that the hygrometric state of the air, generally very dry in Languedoc (where the author is), is the great obstacle to production of the winter egg. Whenever the sea-winds, which always blow in autumn, bring that region to the conditions of the climate in the west, the egg is produced.—Elements of the orbit of the new planet (217) discovered by M. Coggia.—On the resolution of algebraic equations; examination of the method of Lagrange, by M. West.—On linear differential equations with rational coefficients, the solution of which depends on the quadrature of a rational function of the independent variable, and of an irrational algebraic product, by M. Dillner.—On a property of uniform functions of a variable connected by an algebraic relation, by M. Picard.—On the application of the photophone to study of the sounds which occur on the sun's surface, by Prof. Bell. This was suggested by Mr. Bell in visiting the observatory at Meudon. M. Janssen put all the instruments at his disposal, and an opportunity was taken to explore a solar image 0·65 m. in diameter with the selenium cylinder. The phenomena were not sufficiently marked to justify one in affirming success, but Mr. Bell is hopeful of succeeding. M. Janssen has suggested the method of passing rapidly before an objective which should give conjugate images on the selenium apparatus, a series of solar photographs of one spot taken at intervals sufficient to show notable variations in the constitution of the spot. This is to be tried.—On the oxidation of mannite, by M. Pabst.—On the ferments of albuminoid matters, by M. Duclaux. There are certainly over a hundred species, and of these he only knows twenty at present (the physiological conditions, *i.e.* of their existence). Previous classifications prove useless. He gives some general *traits*. *Inter alia*, in milk the ferments change the caseine into soluble albumen, but while the aerobian ferments do this in a slow and regular way, the anaerobians do it with liberation of carbonic acid and hydrogen, part of which becomes sulphuretted hydrogen or even phosphides of hydrogen. In cheese-making the predominance of the aerobians has been unconsciously favoured. All the ferments studied are found in full activity in the stomach. They secrete soluble ferments, which are added to those of the organism.—Inoculation of symptomatic *charbon* by intravenous injection, and immunity conferred on the calf, the sheep, and the goat by this process, by MM. Arloing, Cornevin, and Thomas.

CONTENTS