

of electricity is due to convection currents, and this view has been further strengthened by Righi, who placed a plate of ebonite covered with tin foil on its upper side above a brass plate on which some figure, such as a cross, had been traced with varnish so that the plate was protected at these points from the effect of the illumination, the active rays being absorbed by the varnish. The negative pole of an electric machine was connected to this plate, the positive pole being connected to the tin foil, and the light of an electric arc allowed to fall on the under plate for a few seconds. The plate of ebonite being removed and powdered over with a mixture of sulphur and red lead a yellow cross on a red background was obtained of the same size as the one traced on the brass plate. As the sulphur attaches itself to those parts of the plate which are positively, and the red lead to those which are negatively charged, it follows that the parts of the lower plate which were not protected by the varnish have lost some of their negative charge, which has been carried on to the ebonite plate, and that this displacement has followed the lines of force of the electric field between the plates, which are in this case perpendicular to the two plates. This conclusion is further strengthened by observing that, if the electrified particles which escape from the lower plate are prevented, by means of a screen, from reaching the ebonite, a shadow of the screen is obtained.

The explanation that this convection is caused by the molecules of gas which, after being in contact with the body, become charged and are repelled, is hardly satisfactory, and the experiments of MM. Lénard and Wolf seem to show that it is particles of dust which carry the charge, for they suspended an insulated plate of metal in a box filled with air which had been carefully freed from dust. A plate of quartz fixed in one side of this box allowed the light from an electric arc to fall on the metal plate, while a stream of some vapour could be introduced through a side tube. Under these circumstances the vapour was condensed on allowing the light to fall on the plate if it was uncharged or negatively charged, while if the plate was positively charged no condensation took place. As it is known that a given space can become supersaturated with vapour when no dust is present, but that the introduction of the least trace of dust causes an immediate condensation, it appears that when a body either uncharged or negatively charged is illuminated it gives off some dust, and that the loss of charge is due to this dust. Further particulars of the work which has been done in this subject are given in a paper by M. Blondin in *Électricité*, p. 313, 1893. W. W.

#### NEOLITHIC DISCOVERIES IN BELGIUM.

THE fact that in Belgium flint was in certain districts largely worked during Neolithic times, for the manufacture of hatchets and other implements, has long been well known. The mines in the chalk near Mons, from which the rough blocks of flint were procured by the ancient flint-workers, have frequently been described, and bear a close analogy with the old workings at Grimes' Graves, near Brandon, and with the pits near that place, still being sunk by the flint-knappers of the present day. The fields in the neighbourhood of Mons have their surface strewn with roughly-chipped hatchets, and in other districts the occurrence of worked flints has been not infrequently noted. In a memoir, recently published in the *Bulletin de la Société d'Anthropologie de Bruxelles* (Tome xi. 1892-93), M. G. Cumont has placed on record his discovery of two important Neolithic stations at Verrewinckel and Rhode-Saint-Genèse, neither of which places is far from the main road from Brussels to Charleroi, while both lie at but a short distance from the field of Waterloo. The forest of Soignes extended in early

times over the whole district, and though both stations are on promontories of high land, there are or were, in the neighbourhood of each, springs or ponds from which to obtain a supply of water and, possibly, of fish.

The principal of the two was that at Rhode-Saint-Genèse, whence, including flakes and scrapers, M. Cumont has obtained no less than 3591 worked flints, a few implements made of other kinds of stone being reckoned among them; while Verrewinckel is credited with 815 specimens. Of all the forms a good summary account is given, and characteristic examples are figured in five plates. A detailed map of the district is also given. That the manufacture was carried on at the stations is proved by the presence of upwards of 240 nuclei from which flakes have been dislodged; but few of these appear to have rivalled in size those of specimens near Mons. It is indeed suggested that the hatchets and larger implements were rough-hewn at Spiennes, and finished where they were found. That this was the case is further shown by the fact that some twenty *polissoirs* were collected by M. Cumont, who also regards the flint which forms the material of the implements as having been derived from Spiennes, Obourg, or the neighbourhood of Mons. Over a hundred arrow-heads figure in the lists, and some of these, as shown in the plates, exhibit skilful workmanship. A few quaternary or palæolithic implements from the same region have been described by M. Cumont in another paper. He is to be congratulated on the rich harvest that he has reaped by his labours, which have now extended over a period of eight years. J. E.

#### THE LATE SIR SAMUEL BAKER.

NOTHING impresses more vividly upon one the rapid unfolding of our knowledge of Africa than the fact that the pioneers who forced the first paths into the unknown interior have survived to see generation after generation of younger men, who followed in their footsteps, fall victims to the fatal fascination of that continent. Burton, Grant, and Oswell, the companion of Livingstone's earliest journeys, have died so recently that we realise with a feeling of sorrowful surprise that the last of the first great group of explorers has passed away in the person of Sir Samuel White Baker, on December 30, 1893.

He was born in London in 1821, and after his school education turned his attention to engineering, but his professional work never took so thorough a hold upon his mind as the love for travel and sport, which his private means fortunately enabled him to gratify to his heart's content. Baker first went to Ceylon for elephant shooting in 1845, and saw a great deal of the island in subsequent years. Two books resulted from this experience—"The Rifle and Hound in Ceylon," published in 1854, and "Eight Years' Wanderings in Ceylon," in 1855. The study which he made of the climate of the elevated part of Ceylon led him to establish a colony of English agriculturists, fully equipped with a stock of cattle and sheep, at Nowera Eliya, over 6,000 feet above the sea, which is now a noted health resort. On the death of his wife, in 1855, he went to the Crimea, and carried out some railway work subsequently on the Black Sea coast. In 1860 he married a Hungarian lady, who survives him, after being his devoted companion through the trying years of African adventures, and in the pleasanter wanderings of his later life.

In 1861 he went to Egypt, resolved to carry on an extensive scheme of exploration at his own expense. With this object he spent a year in Abyssinia, working out the complete hydrography of the Atbara and its tributaries, and then started from Khartum to follow up the White Nile itself. In February, 1863, he met Speke and Grant at Gondokoro, returning from their great journey to the

Victoria Nyanza, and a year later Baker was able to supplement their discovery by arriving on the shores of the Albert Nyanza, the size of which he considerably over-estimated. He did not return to London until 1866, and found his fame as a traveller established. He received many honours, including that of knighthood and the gold medals of the Royal Geographical Society and the Paris Geographical Society; but in the following year, again accompanied by Lady Baker, he returned to Africa. The story of his first journey is recorded in two fascinating books—"The Albert Nyanza Great Basin of the Nile," in 1866, and "The Nile Tributaries of Abyssinia," in 1867. In 1869 he commenced the occupation of the upper White Nile provinces for the Egyptian Government, at the head of a body of Egyptian troops, and for five years laboured at the heavy task of restraining the slave-dealing Arabs and keeping in order his apathetic and often disaffected Egyptian subordinates. He established steam navigation on the Nile to the equator, and in his "Ismailia," published in 1874, told the story of the extension of Egypt. This completed his career as a pioneer and explorer; but a traveller he remained to the very end of life, and until last year he spent almost every winter either in Egypt or in India. He took a keen interest in the geography of Africa, and at critical moments in the course of recent developments in that continent he did not fail to give the benefit of his advice for the guidance of the country.

In 1879 he visited every part of the island of Cyprus, recording his impressions in "Cyprus as I saw it in 1879." The many reminiscences of his hunting adventures in every continent made his last book, "Wild Beasts and their Ways," a most valuable contribution to that liberal form of natural history which studies the lower animals as mankind is studied by the sociologist or historian rather than by the anatomist or physiologist. Baker was elected a Fellow of the Royal Society in 1869, and received the official recognition of several governments and innumerable learned societies in all countries for his services to geography and to humanity. His health kept up to within a month of his death, and to the last he remained a keen sportsman. He died in his residence at Sandford Orleigh, Newton Abbot, in Devonshire, and his funeral takes place at Woking to-day.

#### NOTES.

THE list of New Year honours contains the names of two men of science in the public service—Mr. Norman Lockyer, F.R.S., Professor of Astronomy in the Royal College of Science, and Mr. W. H. Preece, F.R.S., Engineer-in-chief to the General Post Office—upon both of whom have been conferred Companionships of the Bath.

WE note with much regret that Prof. Milnes Marshall, F.R.S., of the Owens College, Manchester, met with a fatal accident while ascending Scawfell, on Sunday, December 31. A notice of his life and work will appear in our next issue.

WE have to record the death of Mr. R. Bentley, Emeritus Professor of Botany in King's College, on December 24, at the age of seventy-two. Mr. Bentley became botanical lecturer at King's College in 1859, and three years later he was appointed professor of botany at the London Institute. He was twice—in 1866 and 1867—elected president of the Pharmaceutical Conference, and was well known for his works on pharmaceutical botany.

THE death is announced of Mr. R. Spruce, the well-known botanist and explorer, in his 67th year. Rather more than forty years ago Mr. Spruce visited South America on behalf of the Royal Gardens at Kew, and successfully carried out some very important scientific investigations. He explored the river

Amazon, and crossed the continent from the Atlantic to the Pacific. The introduction of the cultivation of cinchona into India was very largely the result of Mr. Spruce's work, and his fine collection of plants have done good service to commerce and to botanical science.

THE chair of Agricultural Chemistry in the University of Tokio has been accepted by Prof. Loew, of Munich.

MR. SMITH HILL has been appointed Principal of the Aspatria Agriculture College, in succession to the late Dr. Webber.

WE understand that the Queensland Government, in pursuance of their policy of retrenchment, have abolished the post of Government botanist hitherto held by Mr. F. M. Bailey.

PROF. W. H. CORFIELD has been appointed President, and Dr. P. F. Moline secretary, of the English committee of the International Congress of Hygiene and Demography to be held at Budapest this year.

DALZIEL's correspondent at Copenhagen states that the time of Central Europe was adopted throughout Denmark on the first day of this year.

A PRIZE of 1250 francs is offered by the Natural History Society of Dantzig for the best means of destroying the poisonous insects in the forests of Western Prussia.

WE learn from the *Times* that the sum of £600 a year has been bequeathed to the trustees of the Mason College, Birmingham, by the late Mr. Aubrey Bowen, of Melbourne. In making the bequest the testator stipulates that the trustees shall apply the sum in founding six scholarships of £100 a year each in connection with the college, to be called respectively the first, second, and third Bowen scholarships, for the promotion of the study of metallurgy, and civil, mechanical, and electrical engineering; and the rest Priestley scholarships, for the promotion of the study of chemistry.

THE refusal of the S.P.C.K. to withdraw a book by Prof. Percy Frankland because in it experiments on living animals were approved, has led Lord Coleridge to address a letter to the secretary of the Society, in which he says: "I have learned from what seems unquestionable authority that those who administer the affairs of the Society for Promoting Christian Knowledge have finally determined to range the society in the number of those favouring the practice of vivisection and advocating its horrors. It is my duty, as I regard it, to separate myself at once from such a body, and I have accordingly directed Messrs. Childs not to pay any further subscription to the society. As I informed you of what I should feel bound to do in the events which have happened, I shall not occasion the society any inconvenience."

THE following officers of sections have been appointed for the meeting of the Australasian Association for the Advancement of Science, to be held at Brisbane this year:—Section A—Astronomy, Mathematics, and Physics: Vice-presidents, Mr. Clement Wragge and Mr. John Tebbutt; secretary, Mr. J. P. Thomson. Section B—Chemistry: Vice-president, Mr. J. B. Henderson; secretary, Mr. G. Watkins. Section C—Geology and Mineralogy: Vice-president, Mr. W. H. Rands; secretary, Mr. Hargreaves. Section D—Biology: Vice-presidents, Dr. A. Dendy, Mr. F. M. Bailey, and Mr. J. J. Fletcher; secretary, Mr. J. H. Simmonds. Section E—Geography: Vice-president, Mr. D. S. Thistlethwayte, C.E.; secretary, Major A. J. Boyd. Section F—Ethnology and Anthropology: Vice-presidents, Rev. James Chalmers and Mr. E. M. Curr; secretary, Mr. Archibald Meston. Section G—Economic Science and Agriculture: Vice-presidents, Mr. G. A. Coghlan and Mr.