

of preserving it and turning it to practical account in the economy of nature. The population of the German Empire, so he instanced, increases at the rate of one per cent. every year, yet the quantity of nitrogen provided for our sustenance by the ordinary channels remains constantly the same. We shall, therefore, have to take advantage of the free nitrogen present in the air, first to benefit the plants and indirectly to benefit the plant-eating animals. It is known that small organisms, such as the so-called nitrifying bacteria, are able to assimilate directly the free nitrogen occurring in the atmosphere. The immense importance of this economic question is understood upon realising that in the German Empire an area of twelve-and-a-half million acres is covered with lupins and other leguminous plants, cultivated for agricultural purposes, and that these maintain a close touch ("symbiose") with the nitrifying bacteria. The nitrogen of the air which these bacteria attract on such an area may amount to five million quintals, representing at the current market rate something like 300,000,000 marks.

In the Section of Legal Medicine, the director of the Forensic Institute of Graz spoke of the serum diagnostic of blood, and pointed out the difficulties and responsibility involved. Jolles insisted upon the importance of chemical examination of blood, and explained some clinical apparatus which he has devised for such purpose, viz. the ferrometer, the phosphometer and the hæmoprometer.

In the Botanical Section, Prof. Molisch, of Prague, in his paper on the phosphorescence of meat, described the method by which it is possible to obtain such with the certainty of a physical experiment. It is invariably the same micro-organism which causes the phenomenon, namely, the *Micrococcus phosphoreus*, Cohn, a bacterium which has made itself at home all over the continent, though it may be true that it came originally from the sea. Prof. Pribram, Vienna, spoke of the new institute for biological investigation in Vienna, in which it has been made possible to observe an organism during several generations and of studying the principal question of biology, namely, the transmission of acquired characters. Prof. Roehman, Breslau, showed that he had succeeded in keeping mice in the best of health with food consisting of albuminates, carbohydrates and salts mingled in a certain ratio. Prof. Exner, Vienna, with the help of an "acousto-meter," demonstrated that the bad acoustic properties of many public rooms are due in the main to the existence of an echo. Police-Surgeon Dr. Schrank, in the Section for Hygiene, advocated international legal proceedings to prevent the spreading of venereal diseases.

An important demonstration took place in the Section of Mathematics after Prof. Klein, Göttingen, had finished his report on the present condition of the "Encyclopædia of Mathematical Sciences." Prof. Molk, Nancy, added that this great work is now being edited in common by German and French authors, and that this is the first occasion since 1870 that men of science of either side of the Vosges have been brought into active co-operation. In the Section of Astronomy, Prof. Archenholz, of the Treptow Observatory, mentioned that in the determination of the influence which sun spots have on our atmosphere, it is rather the position of these spots and their size on the solar disc than their number which enters into account. Prof. Hasslinger, of Prague, in the Chemical Section, relates the results of his latest experiments by which he has secured diamonds with Goldschmid's thermite method. By adding carbon in various forms, such as that of finely suspended graphite to a fused mass, similar to the South African mother stone Kimberlit, he succeeded in obtaining true diamonds. This is not only an entirely new method, but also corroborates the theory previously maintained of the natural origin of diamonds.

In the Section of Gynæcology, the conservative treatment by bath cures, mud poultices, hot baths, thermophor, &c., was forcibly advocated as yielding complete success and as well qualified to substitute the radical operations, while pus-formation can be stopped by incision only. Prof. Chrobak, of Vienna, pointed out that even so pronounced a radical as Prof. Martine expressed himself in favour of the conservative method. Prof. Kehr, of Halberstadt, gave a *résumé* of no less than 730 operations executed for the removal of gall stones. Where gall stones were removed from the gall bladder, mortality was found to be at the rate of 2 per cent., when the gall bladder was removed with the stones it rose to 3 per cent., and when the stones occurred in the hepatic duct to 6.5 per cent.; however, by continual practice he managed in the last 200 operations to restrict mortality to only 1½ per cent.

From these short notes it will be seen that there was abundant material of a very varied character brought under the notice of the Congress, and dealt with in a manner to make the latter a not unworthy successor of its precursors. Science generally has distinctly gained by its transactions. The next Congress is to be held September 21, 1903. F. SCHUMAN-L. KCLERCQ.

### UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

OXFORD.—The 240th meeting of the University Junior Scientific Club was held on October 31. Dr. A. D. Darbishire, Balliol, showed an interesting case of reversion. The offspring of an albino pet mouse and a Japanese "waltzing" mouse bears many resemblances to a common house mouse, and does not "waltz."

Mr. H. M. Hartley, Balliol, read a paper on "Jöns Jakob Berzelius."

Mr. W. K. Spencer (Magdalen) has been elected to the Burdett Coutts' scholarship in geology.

The Chemistry School suffered a heavy loss at the beginning of the present term in Mr. Vernon Harcourt's resignation of the Lee's readership, which he held for forty-three years. Mr. Harcourt was a Balliol undergraduate, and in 1858 was placed in the first class in the Natural Science School. During the next year he was elected to the Lee's readership at Christchurch. In addition to his research work, he took an important part in the teaching of chemistry. He did not merely train his pupils in the ordinary curriculum required for the schools, but imbued them with the ambitions of the researcher, and it is a striking testimony to his efforts that the best experimental work by Oxford men of the present generation has come from those who were his own pupils or worked under his influence. His departure from Oxford will be greatly regretted by very many friends both young and old, and he will leave behind him a place which it will be very hard adequately to fill.

CAMBRIDGE.—In the combination room of Peterhouse on Wednesday of last week, Lord Kelvin unveiled a portrait of the late Prof. P. G. Tait, honorary fellow of the college, who was senior wrangler and first Smith's prizeman in 1852. The portrait, which was subscribed for by the master and fellows of Peterhouse, was painted by Sir George Reid, president of the Royal Scottish Academy, and it will be hung in the hall of the college by the side of the portraits of Lord Kelvin and the late Dr. H. W. Cookson. The *Times* reports Lord Kelvin to have said, in the course of his remarks, that he valued most highly the privilege of being allowed to ask the master and fellows of Peterhouse to accept for their college a portrait of Prof. Tait. He felt specially grateful for this privilege as a forty-years' comrade, friend and working ally of Tait. The master of Pembroke (Sir George Stokes) spoke of Prof. Tait as an intimate friend, and said all who knew him must have been impressed with his great ingenuity and the versatility of his genius.

Mr. F. C. Kempson, Caius, has been appointed a demonstrator of anatomy.

The following are the examiners for the natural sciences tripos:—Physics: Prof. L. R. Wilberforce, F.R.S., and T. C. Fitzpatrick; chemistry: C. T. Heycock, F.R.S., and H. McLeod, F.R.S.; mineralogy: A. Hutchinson and G. F. Herbert Smith; geology: H. Woods and Prof. T. T. Groom; botany: Prof. Ward, F.R.S., and D. H. Scott, F.R.S.; zoology: J. S. Gardiner and Prof. Graham Kerr; physiology: W. B. Hardy, F.R.S., and E. H. Starling, F.R.S.; anatomy: N. B. Harman and Dr. A. Keith.

Dr. W. H. R. Rivers, University lecturer in experimental psychology, has been elected a fellow of St. John's College.

Mr. H. O. Jones, Jacksonian demonstrator of chemistry, has been elected a fellow of Clare College.

DR. R. H. ADERS PLIMMER has been appointed Grocers' Company research student at the Jenner Institute of Preventive Medicine.

SIR GEORGE KEKEWICH, who has been secretary to the Board of Education since 1890, has resigned his appointment and has been succeeded by Mr. R. L. Morant.

DR. H. S. CARSLAW has been appointed professor of pure and applied mathematics in the University of Sydney. He was fourth wrangler (bracketed) in 1894, and is lecturer in mathematics in the University of Glasgow, and Fellow of Emmanuel College, Cambridge.

THE Vienna correspondent of the *Times* states that according to a communication from St. Petersburg, the Russian Ministry of Agriculture has just decided to found an agricultural high school for women. Students at the school will receive a general training as agriculturists, or will be permitted to restrict their attention to special branches of agriculture, such as dairy farming, gardening, bee culture, poultry keeping and cattle and sheep breeding. The course has been fixed for three years and will include practical occupation on a model farm in addition to study and laboratory work. Although the date on which the new institution will be opened has not yet been decided upon, 325 women who have had an intermediate education have announced their intention to follow the course.

A RESEARCH scholarship of the annual value of 200*l.* for the study of the thymus and other ductless glands has recently been founded by Mr. J. Francis Mason, of Freeland Lodge, Woodstock, Oxfordshire. The scholarship is tenable for two years, but the period may be extended to three years. The medical papers announce that on the recommendation of Prof. G. Sims Woodhead, of Cambridge, and Dr. T. F. S. Caverhill, of Edinburgh, Dr. Swale Vincent, lecturer on histology at the University College, Cardiff, has been appointed the first scholar. In addition to the foundation of the scholarship, Mr. Mason has made a donation of 200*l.* to the laboratory of the Edinburgh Royal College of Physicians to enable the medical superintendent, Dr. Noël Paton, to carry out a combined research on ductless glands.

THE chief of the circulating department of the New York Public Library has recently undertaken an inquiry into the kind and amount of the reading of scientific subjects which takes place in connection with the eleven branches of the New York Library. During May, 1901, the total home circulation of books from the eleven branch libraries was 131,700, and that of books of science 8553, or 6.5 per cent. The most popular subjects of science during the month concerned were, in order, zoology, mathematics, physics and botany, the least popular of the ten sciences tabulated being palaeontology, on which subject there were only twenty-four books in all the libraries put together, and of these only four were borrowed during the month. But a month is too short a time for the investigation, and little importance can be attached to the results.

THE report of the Somerset County Education Committee for the year ending March 31 last shows that very few changes were made during this period in the system of technical education existing in the county of Somerset. The committee continues to encourage agricultural research. For instance, a grant of 100*l.* a year for three years has been made to the Bath and West and Southern Counties' Society in aid of a research by Mr. F. T. Lloyd into the causes of production of flavour in dairy produce, the Board of Agriculture contributing 200*l.* per annum and the Bath and West Society 150*l.* per annum for the same purpose during the same period. A grant of 25*l.* has also been made in aid of the expenses of experiments on the influence of the manuring of pastures on the growth of sheep fed thereon, to be carried out on Lord Ebrington's estate on Exmoor.

WE have received from Sir Philip Magnus the report, for the session 1901-2, on the work of the department of technology of the City and Guilds of London Institute. Among other matters described are the steps by which arrangements have been made for coordinating the technological work of the Institute with that of the Board of Education for England and Wales and of the Scotch Education Department. These arrangements are to be welcomed as helping to systematise technical instruction and as tending to prevent the overlapping of effort which, in educational matters, has generally led to waste and inefficiency. They mark another step towards the unification of different educational activities under a central board. The work of the department of technology of the Institute continues to grow steadily. During the session, the number of classes registered by the Institute increased from 2222 to 2320, and the number of students in attendance at these classes from 34,246 to 36,189. The total number of candidates for examination in Great Britain and Ireland was 16,580, showing an increase of 1023 on the number presented in 1901.

## SOCIETIES AND ACADEMIES.

LONDON.

**Entomological Society**, October 15.—Prof. E. B. Poulton, F.R.S., vice-president, in the chair.—Mr. A. J. Chitty showed an entirely black specimen of *Metoecus paradoxus* as tending to disprove the mimicry suggested by him at the meeting on October 1. Dr. Chapman said that in his experience one out of every six specimens of this species was black. Mr. Donisthorpe stated that out of about one hundred specimens he had never caught or bred a black *Metoecus*.—Mr. E. P. Pickett exhibited a variety of the female of *Argynnis aglaia*, varieties of *Satyrus janira*, and a long series of *Lycaena corydon* taken near Folkestone and Dover in August last, including four males of the last-named species, with the black band on the edge of the forewings much deeper than usual; also twelve dwarf male specimens of this species, four dwarf females and many other aberrant forms. Mr. Goss said this dwarf form of *L. corydon* occurred constantly in one valley about two miles east from Dover, but he was unaware of its occurrence elsewhere in this country. He remarked that a dwarf form of *L. arion* occurred everywhere where the type was found, both in Gloucestershire and Cornwall. Dr. Chapman and Mr. Sloper also remarked on the dwarf form of *L. corydon*.—Dr. Chapman exhibited specimens of *Notodonta (Hybocampa) dryinopa* from Queensland. It was remarkably similar in appearance, structure and habits to *Hybocampa milhauseri*. He stated that the pupa with a similar spine to that of *H. milhauseri* does not cut out a regular oval lid from the cocoon like that species, but by a stabbing process pierces it with a number of holes, so that a piece is more easily pushed off. The cocoon being covered with bits of bark, stone, &c., a cutting process would be impossible, whereas the cocoon of *H. milhauseri* was of pure gum-like silk. He pointed out that the larva much resembled that of *H. milhauseri*, but the hinder segments were more like those of *Stauropus fagi*. He also exhibited living eggs, larvæ and imagines of *Orina tristis*, var. *smaragdina*, from Pino, Lago Maggiore. The beetles were taken on May 30, and had laid many eggs. Dr. Chapman said that the embryo, ready to hatch, might be seen within some of the eggs and its hatching spines observed.—Mr. Sloper exhibited a specimen of *Lycaena hylas*, caught at Dover on September 7.—Mr. Martin Jacoby communicated a paper entitled "A Further Contribution to our Knowledge of African Phytophagous Coleoptera."—Mr. Malcolm Burr read a communication from Hofrath Dr. Carl Brunner von Wattenwyl entitled "Observations sur le nom générique Acrida."

MANCHESTER.

**Literary and Philosophical Society**, October 21.—Mr. Charles Bailey, president, in the chair.—Mr. C. E. Stromeyer exhibited specimens of boiler scale which both internally and externally resembled volcanoes, and he thought might with advantage be studied with the object of gaining a knowledge of volcanic eruptions.—The president read a paper on the adventitious vegetation of the sandhills of St. Anne's-on-the-Sea, in which he remarked on four aliens found in that locality, viz. *Cenothera biennis*, Linn., *Sisymbrium pannonicum*, Jacq., *Ambrosia artemisiaefolia*, Linn., and *Vicia villosa*, Roth. Although the latter plant is distributed throughout Europe, this is probably the first record of its occurrence in Britain. *Ambrosia artemisiaefolia* is also a noteworthy addition, as it is a rare casual in the few places in England where it has previously been found.

PARIS.

**Academy of Sciences**, October 22.—M. Bouquet de la Grye in the chair.—Demonstration of the absolute irreducibility of the equation  $y'' = 6y^2 + x$ , by M. Paul Painlevé.—Synthesis of the alkaline hyposulphites and of the hyposulphites of the alkaline earths in an anhydrous condition, by M. Moissan. The hydrides of the alkalis and the alkaline earths when acted upon with sulphur dioxide under reduced pressure give pure hyposulphites, the hydrosulphites of Schutzenberger. From the fact that hydrogen is given off in this reaction, it is shown that the formula given by Bernthsen,  $\text{Na}_2\text{S}_2\text{O}_4$ , is correct, and that the original formula of Schutzenberger, in which these substances are represented as containing hydrogen, is not in accordance with fact.—The culture of wheat at the experimental field at Grignon in 1902, by MM. Dehérain and C. Dupont. Chiefly owing to the rains in the month of May, the yield of wheat in this experimental station has been exceptionally good. The