

uncertain figures can be recognized by the type?

3. Shall the International Atomic Weight Commission have the current table of atomic weights edited on this basis?

In comment it may be mentioned that not all teachers are troubled by using $O = 16$ as a standard, and that there is a very large body of chemists outside the ranks of teachers, to whom this standard offers the decided advantage, that with this a large share of the more commonly used atomic weights approximate very closely to whole numbers. J. L. H.

PLANT EMBRYO-SACS.

SOME recent studies by the writer on the young ovules of the lily-of-the-valley, pond-weed (*Potamogeton*), and the garden canna have shown a number of interesting features in connection with the development of the embryo-sac. The first division of the nucleus in the hypodermal cell is heterotypic, while the next two represent the 'reducing division'; hence in these plants this cell strongly suggests the pollen-mother-cell of the anther. Apparent reduction takes place as usual just previous to the heterotypic division. The reduced number of chromosomes in the lily-of-the-valley was eighteen, in pond-weed about eight, while in canna it was only three, one of the smallest yet recorded for plants. In the lily-of-the-valley and pond-weed only the heterotypic division is followed by a cell wall, thus resulting in an 'axial row' of two binucleated cells; in canna all three divisions produce transverse walls and the axial row is therefore four celled. In the first named plant both cells enter into the formation of the embryo-sac, in pond-weed the lower only, while in canna only the lowermost of the row of four. Therefore in lily-of-the-valley the embryo-sac contains all four nuclear elements from the mother cell as in *Lilium*, in pond-weed only two, and in canna only one. Can the embryo-sacs in these cases be homologous structures, and should a macrospore contain more than one of these nuclear elements? In pond-weed a membranous pouch formed around the egg-apparatus at a very early period seems to preclude entirely the fusion of polar nuclei to form the endosperm mother nucleus.

In this plant also the chromatin is aggregated into a central ball during the resting stage as in some animal tissue. Those interested in the details of the work may find a fuller account in the *Botanical Gazette* for July of this year.

K. M. WIEGAND.

SCIENTIFIC NOTES AND NEWS.

THE monument of Lavoisier, erected by international subscription, was unveiled at Paris on July 27th. There were present the members of the fourth International Congress of Chemistry and a large number of scientific and public men. M. Berthelot who was to have presided was unable to be present on account of ill health, and his address was read by M. Darboux. The monument was presented to the city of Paris by M. Moissan, to whom M. Leygues, the minister of public instruction, responded.

FAIRMAN ROGERS, formerly professor of civil engineering in the University of Pennsylvania and one of the original members of the National Academy of Sciences, died in Vienna on August 21st. He was born in Philadelphia in 1833, graduated from the University of Pennsylvania and was professor of civil engineering in that institution from 1855 to 1870. From 1853 to 1865 he was also lecturer on mechanics in the Franklin Institute. On retiring from the professorship in the University of Pennsylvania he became a trustee, and gave later to the institution his valuable collection of works on engineering. Mr. Rogers served as an engineering officer in the civil war and was connected with the Coast and Geodetic Survey. He was the author of 'The Magnetism of Iron Vessels' and of numerous papers on scientific and engineering topics. Mr. Rogers was formerly prominent in Philadelphia and New York society, but has latterly lived abroad.

THE Paris 'Conference Scientia' has given a banquet to Lord Lister and will later entertain in a similar manner Lord Kelvin.

M. DUHEM has been elected a correspondent of the Paris Academy for the section of mechanics.

DR. AUGUST LEPPA has been appointed State geologist and Dr. Oskar Zeise district geologist in the Geological Institute at Berlin.

DR. KARL STÖCKL, of the University of Tübingen, has been appointed assistant in the Meteorological Institute at Munich.

CAPTAIN GEORGE ELDRIDGE, a hydrographer, died on August 23d at Chatham, Mass., aged 72 years. He was the author of a book on the tides and completed valuable charts of the coast from Chesapeake Bay to Belle Isle. In later years he made charts of the waters along the coast as far south as Florida.

SIR WILLIAM STOKES, the eminent Irish surgeon, died on August 19th at Durban, having gone to South Africa as consulting surgeon to the British forces. He was born in Dublin in 1839, being the son of Dr. William Stokes, regius professor of medicine in the University of Dublin.

THE death is announced of Dr. August v. Strombeck, the geologist, in Braunschweig, at the age of 92 years.

A MONUMENT in honor of Pelletier and Caventou, the chemists, to whom the discovery of quinine is due, was unveiled at Paris on August 7th. An address was made by M. Moissan, president of the committee, who presented the monument of the city of Paris and by other speakers. There were a large number of pharmacologists present, as the dedication occurred at the time of the meeting of the Ninth International Congress of Pharmacology. The statue is by the sculptor, M. Lormier, and is on the Boulevard Saint Michel.

THE Peabody Academy of Science at Salem, Mass., is trying to raise \$50,000 for an addition to the Museum building. Already over \$26,000 has been pledged for the purpose.

THE New York Botanical Gardens at Bronx Park have received a valuable collection of plants from Miss Helen Gould.

MORE than 900 geologists have become members of the International Congress now meeting at Paris. It appears that four subjects will be brought forward for special discussion: international co-operation in geology, by Sir A. Geikie; the establishment of definite classifications, by T. C. Chamberlin; the publication of a petrographic lexicon by a committee on the subject, and the republication by photography of types of fossil species by Professors Ehrert and

Kilian. Over 400 geologists will take part in the twenty-five excursions that have been arranged. A guide, 1000 pages in extent with numerous figures and plates, has been compiled by the leading French geologists.

DR. W. H. WILEY has sent a notice to the effect that in harmony with the vote of the executive committee, the seventeenth annual meeting of the Association of Official Agricultural Chemists will be held in Washington, D. C., beginning Friday, November 16th, and continuing over Saturday and Monday, 17th and 19th, or until the business of the Association is completed. The authorities of Columbia University have extended the courtesy of the use of the University lecture hall for the various sessions. The following order of business will be observed: The president's address; reports of the referees in the following order: on nitrogen, on potash, on phosphoric acid, on soils, on ash, on foods and feeding stuffs, on liquor and food adulteration, on dairy products, on sugar, on tannin, on insecticides; reports of special committees (abstract committee, food standards, fertilizer legislation, volumetric standards).

A SOCIETY with 400 members has been organized in Switzerland to study questions of school hygiene. Its first meeting has been held recently in Zurich under the presidency of Dr. Schmid, director of public hygiene. The next meeting will be at Lausanne.

THE *Electrical World* reports that a conference in New Haven has been called by Mayor Cornelius T. Driscoll, and Director Alexander Troup, of the Department of Public Works, in order to devise means of saving the old elms of the city. The prolonged drought has accentuated the evidences of general decay, and the city government has at last awakened to the necessity of action. The State Agricultural Experiment Station has for several weeks been at work on the matter. An expert from there, Dr. A. B. Jenkins, will, at a general conference of citizens, to be held shortly, give the result of his observations. The officers of the street Electric Railroads, Electric Light Company and the Gas Distributing Company, have been invited as a body, and personal letters to leading

citizens have gone out from the mayor's office asking them to be present. Is it permanent pavements, or leakage from gas mains, or induction currents from the trolley wires, or the elm-tree beetle that killed the elms? these are the propositions to be discussed. In view of the fact that one-third of the elms on the Central Green are dead or dying, the matter is of great importance.

THE San José scale has appeared in Brooklyn in many places, and it is feared that the insects may do much damage to fruit and shade trees.

THE three surviving buffaloes of the Cheyenne River herd have been sent to Chicago, where they will be sold and perhaps slaughtered. It will be remembered that an attempt was made to continue the herd at Pierre, S. D., but without success.

THE government of Chile has assigned a sum of \$20,000 to the president of the National Society of Agriculture to enable him to purchase agricultural machinery in foreign markets and sell it at cost price to members of the Society.

A REUTER telegram from Liverpool says: The second malarial expedition of the Liverpool School of Tropical Medicine has just wired home from Bonny, in Nigeria, news of a most important discovery, viz, that the parasite which causes elephantiasis has, like that which causes malaria, been found in the proboscis of the mosquito. Oddly enough, the same discovery has just been simultaneously made by Dr. Low in England in mosquitoes brought from Australia, and by Captain James in India. Elephantiasis is a disease which causes hideous deformity in thousands, or rather millions, of natives in tropical countries, and sometimes in European residents. It is due to a small worm which lives in the lymphatic vessels and occludes them. The fact that this worm can live also in the mosquito has long been known, but the discovery of it in the insect's proboscis shows that it enters the human body by the bites of these pests. Europeans in the tropics are indebted to mosquitoes not only for much discomfort but for two dreadful maladies—malaria and elephantiasis; and it is high time that the authorities should begin seriously to consider Major Ross's advice to destroy these

insects or their breeding-places wherever practicable.

DURING the present summer Professor F. E. Nipher, of Washington University, has been working on his methods of developing positive photographs in the light. The work has been done in the rooms of Professor Calvin. He finds that as the camera exposure is made shorter, the developing band must be more strongly illuminated. He is now developing clear pictures, with no trace of fog when the bath is placed in the direct sunlight, but covered by transparent color screens. Good results have been obtained with ruby, and with pure yellow screens. The screens are made by fixing an unused photographic plate, and after drying the gelatin film, the plate is put in a water solution of red or yellow aniline.

IT is said that the returns of the census indicate a population of the United States of about 75,000,000. The cities already counted show the following results, the returns for this year being placed beside those of 1890, with the percentage of increase:

Cities.	1900.	1890.	Percentage of increase.
Greater New York...	3,437,202	2,492,591	37.90
Chicago	1,698,575	1,099,850	54.44
Philadelphia	1,293,697	1,046,964	23.57
Cleveland.....	381,768	261,355	46.07
Buffalo	352,219	255,664	37.77
Cincinnati.....	325,902	296,908	9.77
Milwaukee.....	285,315	204,486	39.54
Washington.....	278,718	230,392	20.98
Jersey City.....	206,433	163,003	26.64
Louisville.....	204,731	161,129	27.06
Minneapolis.....	202,718	164,738	23.05
Providence.....	175,597	132,146	32.88
St. Paul.....	163,632	133,156	22.89
Toledo.....	131,822	81,434	61.88
Columbus.....	125,560	88,150	42.44
Omaha.....	102,555	140,425	— 26.98
Hoboken.....	59,364	43,648	36.01

THE fifth part of Professor William H. Dall's important work on the *Tertiary Fauna of Florida*, forming the fifth part of Vol. III. of the Transactions of the Wagner Free Institute of Science, will probably appear in September.

MESSRS. HENRY HOLT & Co.'s preliminary fall announcement includes 'An Agricultural Botany' (theoretical and practical), by Professor

John Percival, of the Southeastern Agricultural College of Wye, England, intended for practical farmers who have made no systematic study of botany; 'The Anatomy of the Cat,' by Professor Jacob E. Reighard and Dr. Herbert S. Jennings, both of the University of Michigan; 'A Manual of the Flora of the Northern States and Canada,' by Professor N. L. Britton, director of the New York Botanical Garden; 'Schenck and Gürber's Human Physiology,' translated by W. D. Zoethout, with a preface by Professor Jaques Loeb, of the University of Chicago. The same publishers report that Professor James's 'Talks to Teachers on Psychology' has gone to press for the eighth time.

At the anniversary meeting of the Royal Botanic Society, London, the chairman, in moving the adoption of the 61st annual report of the council, referred to the death of the Duke of Teck, who had been president of the Society for more than 30 years. The presidency had since been offered by the council to the Duke of York, who had been obliged to decline. It has been offered to the present Duke of Teck, who is now in South Africa. The report stated that the number of new Fellows and members elected during the year had been 203, and there was now a total of 2205 fellows and members. The Royal Botanic Gardens Club had progressed in a very satisfactory manner, and the number of members was now 570. The School of Practical Gardening had been increased in number by the addition of ten more scholars from the London County Council Technical Education Board, and the Middlesex County Council had signified their intention of giving three scholarships. The Earl of Aberdeen and Viscount Curzon, M.P., were elected into the council.

THE Annual Congress of the British Royal Institution of Public Health opened in Aberdeen on August 2d, with about 800 members in attendance. In the course of his presidential address, Lord Aberdeen reviewed the progress of sanitation, especially as represented by legislation upon the subject. He remarked, according to the report in the *London Times*, that it was exactly 100 years ago since the first enactments were passed which could be described as the

direct ancestry of modern sanitary legislation. The earlier Factory Acts, designed especially for the protection of the children, who were often herded together promiscuously within the actual factory buildings, might come under this category. Another kind of legislation which advanced concurrently took its origin in the necessity which had to be faced in crowded communities for an organized supply of water as distinguished from independent and casual pumps and wells. So, too, with sewerage. The measures dealing with these elementary needs were the parents of our local sanitary Acts as distinguished from the factory class of legislation which had throughout been administered under the authority of the Home Office. It would be difficult to over-estimate the importance of the new kind of administration as a whole, not merely in regard to its direct remedial operations, but as to its indirect and suggestive influence in education and enlightenment as to health arrangements. There had been a great and growing advance in sanitation, but, reviewing the whole position, there was no cause for complacency. Contemplation of what had been accomplished, however, often in spite of prejudice and many obstacles, might assuredly give ground for encouragement and confidence as to future progress and attainment resulting from careful and persevering effort in dealing with the problems which still confronted sanitarians. Amongst these was overcrowding, and from every point of view—religious, moral, and humanitarian—there was crying need for the alleviation of that evil. Happily, public attention was being increasingly drawn to the subject, and a certain amount of reform had been attempted, but they must feel that the subject had yet to be grappled with in all its complexity and magnitude. Another field of sanitary reform was in relation to consumption, regarding which they seemed to have reached an epochal stage. That it was a subject for prevention and control was a revelation, and the main course of action would have to be that of educative regulation.

It is announced in the *British Medical Journal* that the Liverpool School of Tropical Medicine recently heard from the expedition it has sent to West Africa and America. Drs. Annett,

Elliott and Dutton report from Bonny that they have visited Opobo, Slave, Trees, Bakana, Bugana, Degama, Abonnema and Egwanga. They intended to revisit the latter place to complete some experiments there initiated, and then proceed up the Niger as far as Lokoja. The expedition under Drs. Durham and Myer received a cordial welcome from the authorities at Washington and Baltimore, and at the special wish of Dr. Sternberg, Surgeon-General of the United States Army, has gone to Cuba with the American government expedition to study yellow fever in Havana. The Brazilian government is preparing to receive the expedition at the end of this month. A letter has been received at the Liverpool School of Tropical Medicine from Dr. J. Paes de Cavalho, Governor of the State of Para, in reference to the expedition to study yellow fever. He writes: "Appreciating the high and scientific value of the Liverpool School I hereby anticipate my thanks for the valuable services that scientific institution will render to Para, to Brazil, and, in fact, to humanity, thus contributing to the study of a disease which, unfortunately, has become endemic in some Brazilian ports, and every year destroys hundreds of precious existences, carrying discredit to our country and harming our progress. To such a mission I most gladly pledge this government's assistance and co-operation, which I consider due to the noble intention of the said society. The State of Para will do its utmost to receive them with honor."

PROFESSOR E. RAY LANKESTER, director of the British Museum (Natural History), has addressed the following letter to the *Times*: Now that our army is guarding, for the most part peaceably, a line 1000 miles long from Cape Town to Pretoria, and that many of its members may be in want of occupation to fill their time, may I suggest that the opportunity might be taken to help our National Museum to obtain series of specimens illustrating the fauna and flora of the country? Even of the larger animals many of the commonest are still *désiderata* to our collections, while of the smaller things, from meerkats to mosquitoes, from squirrels and stoats to snakes and snails, there are none, however common locally, of

which sets would not be of value and interest to our specific workers. It should be remembered that for the study of variation, individuals, seasonal and geographical, large series are wanted from as many different places as possible, so that no one, say, at Colesberg or De Aar, need think that his specimens will not be appreciated because some one else at Bloemfontein or Kroonstad is also sending specimens supposed to be of the same sort. Especially all the 'game' animals are wanted, from antelopes to smaller buck of different sorts (steenbok, grysbok, etc.), hares, rock rabbits, and other things that our officers appear to be now frequently shooting. Also such 'vermin' as jackals, hyenas, monkeys, baboons, etc. Skins and skulls of all these, marked with locality, date, and a clear indication of which skull belongs to which skin, would be most acceptable. And the same with the smaller animals. I shall be glad to hear from persons of natural history tastes in South Africa (and, indeed, in any other part of the world where our countrymen may be), and to give them fuller particulars about any special branch of natural history to which they may be attracted.

THE *Englishman*, of Calcutta, as quoted in the *British Medical Journal*, gives a summary of a resolution, extending over some 25 pages, which has been published in the Home Department on the chapters of the India Plague Commission dealing with the measures for the suppression of plague. Every aspect of the question is fully dealt with, and the main conclusions appear to be as follows: The government of India thinks the obligations of private persons and medical practitioners to report cases of sickness can be relied on only in very exceptional circumstances, and that the house-to-house visitations are justifiable only when plague exists in small well-defined areas. The government agrees with a surveillance over persons arriving from infected areas, and believes this means has been freely resorted to in rural areas, but does not favor the system of rewarding informers of plague cases. It publicly thanks the many volunteers who devoted themselves to the work of fighting the plague, and thinks the expense of special reporting

agencies are fully compensated for by their success. Much attention is devoted to the question of corpse inspection, but on a review of the whole case the government considers the compulsory examination of bodies a very unpopular measure and its object is likely to be defeated. With regard to the compulsory removal to hospitals the Governor-General accepts the conclusion of the Commission, but desires that the removal should be compulsory only in places and under circumstances when it can be an effectual precaution. The removal of moribund patients is prohibited. Government agrees that the segregation of contacts should be abandoned as ineffective and harassing, except where special conditions are stated by the Commission to enable it to be carried out. The complete evacuation of villages and small towns when attacked is believed to be the most effective safeguard against the spread of the disease yet discovered. The question of disinfection is dealt with at length, and Government considers the Commission's advice generally excellent. Government and the Commission are in accord with the precautions taken regarding the annual pilgrimage to the Hedjaz, but the examination of the passengers from one infected port to another is now ordered to cease. With regard to the examination of railway passengers, all local governments are desired to report on the question of reducing the inspection stations, as from an economical point of view it is highly desirable now to maintain only those which are absolutely necessary; and, acting on the advice of the Commission, all disinfection stations maintained on the railways are ordered to be closed.

CONSUL-GENERAL GUENTHER writes to the Department of State from Frankfort, July 24, 1900: According to the *Electro-Technical Gazette*, German electrical works show great increase. On March 1st last, there were in operation 652 electrical works, against 489 the previous year. One hundred and twenty-two works were in progress of construction, of which 17 were to be ready for operation on July 1st. Twenty-seven were completed before 1890; all the others were constructed within the last ten years. The number of places with electric light exceeds that of

places illuminated by gas—900 against 850. The largest electrical plant is at Rheinfelden, with 12,360 kilowatts. Then follow one at Berlin, 9230 kilowatts; one at Hamburg, 7290 kilowatts; one at Munich, 6110 kilowatts; two others at Berlin of 5452 and 5312 kilowatts, respectively; one at Strassburg, 4955 kilowatts; two others at Berlin, of 4676 and 4655 kilowatts, respectively; one at Chorzow, 4310 kilowatts; one at Frankfort, 4152 kilowatts; one at Dresden, 3580 kilowatts; one at Stuttgart, 3208 kilowatts; and another at Hamburg, 3150 kilowatts. All the electrical works supplied last year 2,623,803 incandescent lamps, 50,700 arc lamps, 106,368 horsepower for electromotors, etc.

UNIVERSITY AND EDUCATIONAL NEWS.

IN the will of James F. Malcolm, a bequest of \$10,000 to Rutgers College, is revoked by a codicil in which he says that his daughter will carry out his intentions as expressed by him to her prior to his death.

THE will of the late Collis P. Huntington gives \$100,000 to Hampden Institute, Virginia. His house on Fifth Avenue, of great value, is left to Yale University, in case his son has no children.

THE trustees of the Lowell Textile School have received a gift from Mr. Frederick F. Ayer of \$35,000 for the purchase of a site for the school which has been in operation three years on leased property. The State, by the last Legislature, provided \$35,000 for the erection of the buildings, on condition that land and machinery to like amount should be provided, so the whole sum of \$70,000 is now available for the establishment of the school in a permanent home. There are now five important textile schools in the United States: Philadelphia, Lowell and New Bedford, Mass., Clemson, S. C., and Atlanta, Ga.

THE Fayerweather will case has been once more reopened. It is said that the expenses of the suits have been about \$500,000.

PROFESSOR KARL AUWERS, of Heidelberg, has been appointed director of the Chemical Institute of Griefswald, as successor to Professor Limpricht, who has retired.