believed that this was greatly over-estimated, and that it would be of short duration. But whether the inconvenience be little or great, it must some time be encountered, and it will not be decreased by the increase of the population. It will be no easier for a hundred millions of people ten years hence to make the change than for seventy millions to-day. It is simply a question whether this generation shall accept the annoyance and inconvenience of the change largely for the benefit of the next, or shall the people of to-day selfishly consult only their own ease and impose on their children the double burden of learning and then discarding the present "brain-wasting system." The present generation must meet this test of selfishness or unselfishness, and answer to posterity for duty performed or neglected.

The Committee, after a careful consideration of the whole subject, unanimously reached the conclusion that the metric system of weights and measures should be put into exclusive use in the various Departments of the Government at such future date as shall allow adequate preparation for the change, and at the end of a fixed time thereafter that said system shall be recognised as the only legal system for general use. They, however, do not deem it wise at present to require a change in the methods of surveying the public lands, as this would in that respect destroy rather than promote uniformity.

The Committee deemed it prudent to enlarge the time for the proposed system to take effect to a date somewhat later than the date proposed in the Bill submitted, adopting for America about the average time deemed necessary by other nations. It is therefore recommended that the time for adoption in the Departments and operations of the Government, except in the completion of the survey of the public lands, be fixed for July 1, 1898, and that the adoption of the metric system for use in the nation at large be fixed as coincident with the dawn of the twentieth century, and that date be accordingly changed to January 1, 1901, the first day of the new century.

The Bill reads as follows :—

"A Bill to fix the standard of weights and measures by the adoption of the metric system of weights and measures.

"*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled*, That from and after the first day of July, eighteen hundred and ninety-eight, all the Departments of the Government of the United States, in transaction of all business requiring the use of weight and measurement, except in completing the survey of the public lands, shall employ and use only the weights and measures of the metric system.

"Sec. 2. That from and after the first day of January, nineteen hundred and one, the metric system of weights and measures shall be the only legal system of weights and measures recognised in the United States.

"Sec. 3. That the metric system of weights and measures herein referred to is that in which the ultimate standard of mass or weight is the international kilogram of the International Bureau of Weights and Measures, established in accordance with the convention of May twentieth, eighteen hundred and seventy-five, and the ultimate standard of length is the international metre of the same bureau, the national prototypes of which are kilogram numbered twenty and metre numbered twenty-seven, preserved in the archives of the office of standard weights and measures.

"Sec. 4. That the tables in the schedules annexed to the Bill authorising the use of the metric system of weights and measures passed July twenty-eighth, eighteen hundred and sixty-six, shall be the tables of equivalents which may be lawfully used for computing, determining and expressing the customary weights and measures in the weights and measures of the metric system."

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—The first Smith's Prize is awarded to Mr. W. S. Adie, bracketed Senior Wrangler 1894; the second is divided between Mr. A. Y. G. Campbell, bracketed ninth Wrangler, and Mr. F. W. Lawrence, bracketed fourth Wrangler in the same year. All the prizemen are members of Trinity College.

Prof. Newton, F.R.S., has been reappointed one of the managers of the Balfour Studentships in Animal Morphology until June 1901.

The School of Medicine of the University of Toronto has been placed on the list of Colonial Schools recognised by the Special Board for Medicine.

The Council of the Senate recommend for affiliation to the University the Roman Catholic College of St. Edmund's, Ware, the successor since 1793 of the former English College at Douai.

On account of the increasing length of the practical examinations for the Natural Sciences Tripos, the Medical Board propose that the examinations for M.B. shall in future take place at a later date in the Michaelmas and Easter Terms. It is noted that a number of medical students are following with advantage the course for the ordinary B.A. degree, and a rearrangement of the dates of the examinations has become necessary to meet their case.

The next examination for the diploma in Agriculture will begin on July 6, and last a week.

SIR WILLIAM PRIESTLEY, the distinguished physician, has been elected parliamentary representative of the Universities of Edinburgh and St. Andrews.

THE City and Guilds of London Institute is inviting applications for the Professorship of Mechanical Engineering and Applied Mathematics at the Technical College, Finsbury, rendered vacant by the appointment of Prof. John Perry, F.R.S., to a Professorship at the Royal College of Science. Applications for the appointment should be addressed to the Honorary Secretary at the office of the Institute, Gresham College, E.C.

THE following are among recent appointments :—Dr. Zuber, Privatdocent in Geology in Lemberg University, to be Extraordinary Professor; Dr. Henking, Privatdocent in Zoology in Göttingen University, to be Extraordinary Professor; Dr. Oertel to be Observer in the Observatory at Munich; Dr. Ludwig Kathariner to be Professor of Zoology and Comparative Anatomy in the University of Fribourg; Prof. Dr. Buchner to be Extraordinary Professor of Chemistry at Tübingen; Dr. Albert Fleischmann to be Director of the Zoological Institute at Erlangen; Dr. George Rörig to be Extraordinary Professor of Zoology in Königsberg University.

MR. JAMES G. LAWN, Instructor in Mine Surveying at the Royal College of Science, London, has been appointed Professor of Mining at the South African School of Mines. The School was started some years ago, but it is undergoing reorganisation. It is proposed that the course of instruction shall extend over four years; the first two years—in which scientific instruction will be given—being spent at the South African College, Cape Town. The third year will be spent at Kimberley, where theoretical and practical instruction in mining will be given. The fourth year will be chiefly taken up with practical work at Johannesburg. The Cape of Good Hope University is to be asked to establish a Mining degree, the final examinations for which the students would attend at the end of their fourth year. So far only the preliminary scientific instruction has been given, and Mr. Lawn is going out to organise and initiate the instruction to be given in the third and fourth years of the course. The salary is £800 a year.

FULL recognition is being given to the scientific attainments of women in America. We learn from *Science* that at Bryn Mawr College Miss F. Cook has been appointed Fellow in mathematics; Miss F. Lowwater, in physics, and Miss C. Fairbanks, in chemistry.

Science records the following gifts to education and research in America. Mrs. Lydia Bradley, of Peoria, Ill., has made known her attention of giving 1,000,000 dols. for a polytechnic institute in Peoria.—A Boston citizen, whose name is withheld, has given 100,000 dols. to establish a chair of Comparative Pathology in the medical school of Harvard University.—Mrs. J. S. T. Stranahan, of Brooklyn, has given 5000 dols. to the building fund of Barnard College.—The Catholic University has received 5000 dols. by the will of the Rev. Father Dougherty, of Honesdale, Pa.—It is expected that Mayor Strong will approve the Bill authorising the Board of Estimate and Apportionment to give the College of the City of New York 175,000 dols. a year instead of 150,000 dols., the amount it has received for several years.

AT the general meeting of Convocation of the University of London, held on Tuesday, it was resolved—"That some means should be devised for a more thorough preliminary investigation

than has hitherto been usual of the mathematical questions proposed to be set in the University examinations." The following resolutions were also carried. (1) That a special Committee of thirteen members, including the Chairman of Convocation, be nominated to prepare for presentation to any Statutory Commission which may be appointed a memorandum of points in the scheme of the Royal Commission in which modification is desirable, and with power to confer with such said Statutory Commission, and with the Senate or any Committee thereof. (2) That this special Committee consist of the following members:—The Chairman of Convocation, Dr. Allchin, Dr. Benson, Mr. Bompas, Mr. Stanley Boyd, Dr. Cave, Mr. Cozens-Hardy, Mr. Thiselton-Dyer, Dr. Heber Hart, Dr. Napier, Mr. Blake Odgers, Dr. Sansom, Prof. S. P. Thompson. (3) That the new and enlarged special Committee recommended for appointment in the report of the special Committee on the memorandum to be presented to such said Statutory Commission should have full powers, if it thinks fit, to prepare amendments to the London University Commission Bill and to have them proposed on behalf of Convocation in either House of Parliament.

AT a special meeting of the Technical Instruction Committee of the Cheshire County Council the following resolutions were adopted, and instructions given for them to be forwarded to the President and Vice-President of the Council.

(1) "That in the opinion of this Committee the Education Bill of this Session, as printed, will have the effect, by adding new subjects (not technical nor manual) for assistance out of the Customs and Excise grant, of making it impossible for the successors of this Committee, without recourse to a rate in aid, to continue the maintenance grants to those Science and Art Committees which their predecessors have, in good faith, on the assurance of her Majesty's Ministers in the past that the grant or its equivalent would not be withdrawn, fostered, or created. That the financial clauses of the Bill, confirming only a rate of one penny in the pound, in addition to the local taxation (Customs and Excise) grant, are inadequate for the work of secondary and technical education it is proposed the new Education Committee shall undertake."

(2) "That this Committee would respectfully urge upon her Majesty's Government that a County Council may have the option of nominating two school committees, one an elementary school committee, and the other a secondary school committee, with a view to secure for service in each committee members specially qualified for the work of each grade who would not have leisure time to attend to the two combined, and ventures to express a hope that for the purpose of education other than elementary the cost thereof may be wholly borne by the Imperial Exchequer, or, failing that, the Education Committee may have the benefit of at least a rate of *2d.* in the pound."

(3) "That, in the opinion of this Committee, Clause II., Subsection 3, relating to the performance by the education authority of the work of the numerous school attendance committees in the county, is impracticable, and cannot be undertaken by the education authority."

SCIENTIFIC SERIALS.

American Journal of Science, April.—The morphology of *Triarthrus*, by C. E. Beecher. Most of the recent advances in the knowledge of trilobite structure have come from the study of Triarthrus. Much time was spent by the author in carefully working out the numerous specimens from the abundant material in the Yale Museum. Altogether upwards of five hundred individuals with appendages more or less complete have been investigated; and at the present time all the important exoskeletal features have been seen and described. The appendages of *Triarthrus* are exceptionally long. It must have been a sort of "Daddy Long-legs" among the Trilobites, as *Scutigera* is among the Myriapoda. The delicacy of the appendages and ventral membrane of trilobites and their rarity of preservation are sufficient demonstration that these portions of the outer integument were of extreme thinness, and therefore perfectly capable of performing the function of respiration. The paper is accompanied by a plate showing a dorsal and a ventral view of a specimen fully restored.—Climatic zones in Jurassic times, by A. E. Ortmann. The author proves that the argument given by Neumayr for the non-existence or non-action of topographical differences upon the distribution of the Jurassic faunas is a complete failure. Only one point may be granted, that a separation by land was not present in an extensive manner. On the other hand, it is highly probable that on the one side differences of depth of the seas, on the other differences of facies, are the laws governing the faunistic differences. The first cause applies especially to the distinction of the Mediterranean and Middle-European provinces, the second to that of the Middle-European and Russian (Boreal) provinces.—Metamorphism of a gabbro occurring in St. Lawrence County, N.Y., by C. H. Smith, junr. The extreme effect of metamorphism on this gabbro has been to produce complete recrystallisation, yielding a granulitic structure. This metamorphism takes place in three stages. The first is marked by the formation of scapolite and some scaly hornblende, with little or no sign of crushing, the probable agents of change being pressure, heat, and solutions. In the second stage the effects of crushing are pronounced. All of the constituents are granulated, and the rock becomes more or less gneissoid. At the same time the scaly hornblende increases in quantity, seeming to reach its maximum in this phase of the rock. Finally, in the third stage, the rock undergoes complete recrystallisation, the newly-formed constituents being arranged normal to the pressure that has crushed the rock, and thus producing a pronounced gneissoid structure.—An occurrence of free gold in granite, by G. P. Merrill. A piece of quartz described as "gold ore, Sonora, Mexico," was found to be not superficially impregnated with gold, but to contain flecks of free gold throughout its substance. There is no other way of accounting for it other than by considering it a true constituent of the rock, crystallised from the original magma. It is completely embedded in the clear grassy quartz and unfissured felspars. No pyrite or other sulphides could be detected. This is believed to be a unique occurrence.

Wiedemann's Annalen der Physik und Chemie, No. 4.—On the nature of the X-rays, by D. A. Goldhammer. The author believes the X-rays to be not longitudinal light waves, but ultra-violet rays of extreme shortness. The absence of refraction would be quite consistent with this view, since in several theories of dispersion the index of refraction for infinitely short waves is unity. The absence of reflection would be due to the smallness of the waves compared with the unevenness of ordinary polished surfaces. This also explains the absence of polarisation. As regards the variation of absorption with the density simply, this is analogous to the absorption of light by aniline and other solutions, which simply depends upon their concentration. The author gives no reason against these rays consisting of longitudinal vibrations.—On the determination of overtones, by C. Stumpf. Careful investigations show that wherever overtones may influence the result of an experiment, the source of sound must always be specially tested as regards its composition, and that theoretical proofs of the simplicity of a tone are often misleading. Wherever simple tones are to be produced, the sound must be as faint as possible, or the overtones must be excluded by interference.—On the origin of contact electricity, by C. Christiansen. To establish a difference of potential between mercury and either zinc, cadmium, lead, or tin amalgam, the presence of oxygen is essential. Further experiments were made with hydrochloric and sulphurous acids, carbon bisulphide and nitrous oxide. Hydrochloric acids gave a polarisation effect with all the amalgams for which it was found in the case of oxygen, and for copper in addition. SO_2 gave effects with zinc and cadmium. The other gases gave no effect.—Polarisation and resistance of a galvanic cell, by Franz Streintz. The author shows that the determination of galvanic polarisation in an electrolytic cell in a closed circuit is an impossibility, since the "resistance" of the cell is an unknown function of the current strength.—The iron sphere in a homogeneous magnetic field, by O Grotrian. By induction experiments made with coils of wire laid over an iron sphere so as to cut off segments of various sizes the author shows that the sphere is evenly magnetised throughout its substance, as predicted by theory. The result is not affected by the direction of "grain" of wrought iron.—Diminution of the intensity of sound with the distance, by K. L. Schaefer. Sound does not diminish in intensity strictly with the square of the distance, but at first more slowly, and then more rapidly. This was proved by means of a telephone attached to a clock and brought to different degrees of sensitiveness.