

point, the person should purchase to the most convenient point at which such ticket can be obtained and there repurchase through to the place of meeting, procuring a standard certificate from each agent from whom a ticket is purchased.

2d. *It is absolutely necessary that certificates be procured, indicating that the full fare has been paid for going passage and the route for which ticket or tickets for the return journey should be sold. No refund of fare can be expected because of failure to secure such certificates.*

3d. Tickets for the return journey will be sold at one-third the first-class tariff fare only to persons holding certificates of the standard form duly signed by the Permanent Secretary of the A. A. A. S., and signed by the special agent appointed for that purpose.

4th. No certificate will be honored that was procured more than three days (Sunday not included) before the meeting assembles (except that when meetings are held at distant points to which the authorized transit limit is more than three days, the authorized transit limit will govern), nor more than two days (Sunday not included) after the first day of the meeting. No certificate will be honored for return ticket unless presented during the time that the meeting is in session, or within three days (Sunday not included) after adjournment.

5th. Tickets for return journey will be limited to continuous passage on first train after purchase.

6th. Certificates will not be honored by conductors; they must be presented to ticket agents.

7th. Neither the certificates nor tickets furnished for this occasion are transferable, and if presented by any other person than the original purchaser, they will not be honored but will be forfeited.

Members desiring longer time than that allowed in connection with certificate reduction, viz., 3 days before the meeting assembles to 3 days after adjournment (Sunday not included) are advised to take advantage of the Colorado tourist fares or summer excursions, which, while costing a little more than the fare and one-third, are good from July 10 to October 31.

CORRECTION TO PROGRAM OF MONDAY AFTER-  
NOON, AUGUST 26.

(See page 26 of the preliminary announcement.)

Through some clerical or printer's blunder the vice-presidents elect are here announced to give their addresses at 3 o'clock at the high-school building. As a matter of fact, this is all

wrong. The vice-presidential addresses which will be given are those of four of the retiring vice-presidents, as follows:

Vice-President Brashear, before the Section of Mechanical Science and Engineering.

Vice-President Davenport, before the Section of Zoology.

Vice-President Butler, before the Section of Anthropology.

Vice-President Woodward, before the Section of Social and Economic Science.

It will probably be arranged so that two of these addresses will be given at 3 o'clock and two at 4 o'clock, in order to allow members interested to hear two addresses.

#### THROUGH PULLMAN SERVICE.

If a sufficient number of passengers can be guaranteed, arrangements can be made for through Pullman service, to connect at Chicago or St. Louis, so that members from different sections of the country can make the trip to Denver together. The Permanent Secretary therefore invites all members who plan to attend the meeting and who wish to take advantage of this through Pullman service to communicate with him at once, stating the name of the road over which they intend to travel and the date of their departure. If a sufficient number of replies are received, the arrangement will be made and members notified.

#### SCIENTIFIC NOTES AND NEWS.

PROFESSOR JAMES DEWAR, the eminent chemist, has been elected president of the British Association to follow Professor A. W. Rücker, and will preside at the Belfast meeting in 1902.

OXFORD UNIVERSITY has conferred its D.Sc. on Philip Lutley Sclater, M.A., F.R.S., secretary of the Zoological Society, London, and its D.C.L. on C. N. Dalton, C.B., comptroller-general of patents, designs and trade-marks.

DR. JOHN S. BILLINGS, director of the New York Public Library, has been elected president of the American Library Association.

M. MAUPAS has been elected a correspondent of the Paris Academy of Sciences in the

section of anatomy and physiology, replacing the late M. Marion.

The following have been appointed members of the visiting committee of the National Bureau of Standards: Dr. Ira Remsen, president, Johns Hopkins University; Professor Elihu Thomson, electrician, General Electric Company; Professor E. L. Nichols, professor of physics, Cornell University; Dr. Henry S. Pritchett, president, Massachusetts Institute of Technology; Mr. Albert Ladd Colby, metallurgical engineer, Bethlehem Steel Company, and secretary of the Association of American Steel Manufacturers. Professor E. B. Rosa, of Wesleyan University, has been appointed physicist.

DR. HENRY WOODWARD, F.R.S., keeper of the Department of Geology of the British Museum (Natural History), will retire in November, having some time since reached the age limit. It is expected that he will be succeeded by Dr. Arthur Smith Woodward, F.R.S., under whom the department would certainly be administered in accordance with the best scientific methods. Dr. Woodward's visit to this country last year is remembered with great pleasure by many American men of science.

PROFESSOR C. LE NEVE FOSTER, of the Royal School of Mines, London, has resigned the position of inspector of mines, which he has held for the past twenty-eight years.

WE regret to learn that Professor Rudolf Virchow has met with an accident, cutting his head by a fall, on June 13. His health has for some time past not been very good. Professor Virchow will celebrate his eightieth birthday on October 13.

PROFESSORS DAVID HILBERT (Göttingen), Georg Cantor (Halle) and Ulisse Dini (Pisa) have been elected foreign members of the London Mathematical Society.

J. W. LOWBER, PH.D., F.R.G.S., Austin, Texas, has been elected a fellow of the Royal Meteorological Society of London.

THE Belgian quinquennial jury of medical sciences has awarded its prize of the value of 5,000 francs to Professor Van Gehuchten of Louvain, for his researches on the brain and spinal cord.

PROFESSOR J. H. AMES, of the Johns Hopkins University, has accepted the position of associate editor of the *American Journal of Science* held by the late Professor H. A. Rowland.

DR. R. A. DALY has resigned his place as instructor of physiography at Harvard University to accept a position on the Geological Survey of Canada, where he will be attached to the party that is marking the international boundary on the Pacific slope. Mr. A. W. G. Wilson, who has just received the degree of Doctor of Philosophy in geology at Harvard, has also been appointed to the Canadian Survey for work in the country about Lake Nipigon.

GEORGE G. HEDGCOCK, B.Sc., 1899, and A.M., 1901, of the University of Nebraska, and sometime fellow in botany, has been appointed by the United States Department of Agriculture to investigate the diseases of the sugar beets of Nebraska and other western states.

PROFESSOR JOHN B. JOHNSON, dean of the College of Mechanics and Engineering of the University of Wisconsin, opened the discussion on present tendencies in technical and professional education at the twenty-ninth annual Convocation of the University of the State of New York, held at Albany last week.

AT a meeting of the Western Society of Engineers on June 26, Professor B. E. Fernow, of the New York State College of Forestry, delivered an address on 'The Relation of Forestry to Engineering.'

A COMMITTEE has been formed to erect in Bern a memorial to the great anatomist and physiologist Albrecht v. Haller, who was born in Bern in 1708 and died there in 1777.

DR. JOHN FISKE, the well-known lecturer and author, died on July 4 after a short illness caused by the excessive heat. Born in 1842, he graduated from Harvard University in 1863 and was for a time connected with the University as lecturer on philosophy and later as assistant librarian. Fiske did much by his books, lectures and articles to popularize the doctrine of evolution, especially on the lines laid down by Mr. Herbert Spencer. His 'Out-

lines of Cosmic Philosophy,' published in 1874, was followed by a long series of books, his contributions to history being in large measure influenced by his earlier work on evolution. Fiske enjoyed the personal friendship of Darwin, Huxley, Spencer and other great leaders, and the esteem of a large section of the general public.

PROFESSOR PETER GUTHRIE TAIT, who has held for the past forty years the chair of natural philosophy in Edinburgh University, died at Edinburgh on July 4. Born at Dalkeith in 1831, he attended Edinburgh University, and afterwards Cambridge University, where he was senior wrangler, first Smith's prizeman and fellow of Peterhouse. In 1854 he became professor of mathematics at Queen's College, Belfast, whence he removed to Edinburgh in 1860. He was the author of a long series of publications, both technical and popular in character. These include the 'Dynamics of a Particle,' 'Quaternions,' 'Thermodynamics,' and works on 'Heat,' 'Light' and 'The Properties of Matter.' His scientific papers were collected and published in 1898. In conjunction with Professor Balfour Stewart, he was the author of 'The Unseen Universe,' and, in cooperation with Lord Kelvin, prepared the well-known 'Natural Philosophy' of Thomson and Tait.

DR. THEODORE GREELY WHITE died in New York city on July 7, aged twenty-nine years. After having graduated from the School of Applied Sciences of Columbia University, he received the Ph.D. degree two years ago for work in geology. He was also assistant in the department of physics. Dr. White had made valuable contributions to geology and botany, and leaves a considerable amount of unpublished material. He was always active in good work, being last year one of the secretaries of the New York Academy of Sciences and acting editor of the publications of the academy.

THE small band of New Mexico naturalists has suffered a severe loss by the death of Mr. Francis J. Birtwell, of Albuquerque, who had spent two years investigating the ornithology of the territory, and who had in preparation an elaborate paper on the birds of New Mexico. Mr. Birtwell was married on May 24, and went

with his wife to study the birds of the Upper Pecos. On June 28, at Windsor's Ranch, 31 miles from Glorieta, he climbed a tall fir tree to obtain a bird's nest. Becoming dizzy, he signalled for help, and was being let down on a rope when by some means he jerked one arm out of the noose, and the rope tightened around his neck and strangled him before anyone could come to his assistance. Thus perished a man who was expected by those who knew his work to take a prominent place among American ornithologists. It is understood that his manuscript on the birds of New Mexico is in good order, and it is much to be hoped that the means will be found for its publication.

DR. JOHN CURWEN, a specialist in mental diseases, who for fifty years has been superintendent of hospitals for the insane at Harrisburg and Warren, Pa., died on July 2, aged eighty years.

MR. JOHN H. TEGMEYER, a well-known civil engineer, died at Baltimore on July 4, aged eighty years.

PROFESSOR LANGENBUCH, the eminent surgeon, director of the Lazarus Hospital, Berlin, died on June 9.

THE late Jacob S. Rogers, of Paterson, N. J., a locomotive builder, has bequeathed nearly his entire estate to the Metropolitan Museum of Art, New York City. The value of the bequest is estimated at from \$6,000,000 to \$8,000,000.

MR. ANDREW CARNEGIE has offered to give to the cities of San Francisco and Detroit \$750,000 for the establishment of public libraries.

THE Newberry Library, of Chicago, has acquired the philological library collected by the late Louis Lucien Buonaparte. It contains 15,000 volumes and is said to be the best philological library in the world.

IN connection with the census of India, a sum of at least £10,000 will be spent in collecting statistics relating to ethnology and anthropology.

A MAGNIFICENT specimen of the elephant seal (*Macrorhinus leoninus*) from the Macquarie Islands has lately been presented to the British Museum by the Hon. Walter Rothschild, one

of the trustees. The skin has been stuffed by Messrs. Gerard, who have imparted to the animal with its enormous fleshy nose a most lifelike, not to say human, appearance.

PLANS have been made to collect funds for a research scholarship at Trinity College, Dublin, in memory of the late Professor G. F. Fitzgerald.

AN anatomical museum fund, in memory of the late A. H. Hughes, who died in South Africa, has been established in connection with University College, Cardiff. Mrs. Hughes, the widow of Professor Hughes, has contributed £1,000 to this fund.

The deaths from the plague in Cape Colony to June 8 have numbered: Europeans, 58; colored persons, 164; Malays, 36; Indians, 9; Chinese, 0; natives, 59; total, 326. Only one case has occurred under naval and military control.

THE National Bureau of Standards was opened on July 1, with headquarters in the building of the Coast and Geodetic Survey. Plans are being prepared for the new building, for which Congress has made provision.

It is expected that the new Horticultural Building in Boston will be completed by the end of August, when there will be a special exhibition, arranged by Professor Charles S. Sargent, of the Arnold Arboretum.

THE observatory at Nice and its branch on Mt. Mourier has recently been visited by the board of control, consisting of MM. Gréard, Henri Poincaré, Barrot, Cornu, Lippmann, Lœwy, Darboux, Mascart, Troost, Bischoffsheim.

THE Philippine Commission has established a government biological and chemical laboratory at Manila, which will have branch stations elsewhere. A superintendent will be appointed with a salary of \$4,000. A board of health has been established with a commissioner with a salary of \$6,000.

The Navy Department has purchased a tract of land surrounding the naval observatory, in order to protect the instruments. It was deemed advisable not to have any highways within 1,000 feet of the clock room, where the instruments are stationed, and a circle with a

radius of 1,000 feet was therefore drawn round the observatory. At the last session of Congress \$145,000 was appropriated to purchase the inclosed land, and of this sum \$122,000 has been expended for the purchase of about sixteen acres.

DR. C. W. ANDREWS, assistant in the Department of Geology, British Museum, Natural History, has been making collections in Egypt, which he has this month brought back with him to London.

THE expedition, planned by the South Dakota Geological Survey, into the Grand River region for this season has been postponed, because of smallpox in the Indian reservations where much of the work would have been done. It is hoped that next year circumstances will be more favorable.

THE Southeastern Union of Scientific Societies (England) held its sixth annual congress at Haslemere and Hindhead last month, under the presidency of Mr. G. A. Boulenger, F.R.S. The congress next year will be held at Canterbury, under the presidency of Dr. Jonathan Hutchinson, F.R.S.

WE learn from *Nature* that a committee has recently been appointed by the Institution of Civil Engineers, with the support of the Institutions of Mechanical Engineers and Naval Architects and of the Iron and Steel Institute, to consider the advisability of standardizing the various kinds of iron and steel sections, and, if found advisable, then to consider and report as to the steps which should be taken to carry such standardization into practice.

THE civil service commission reports that no applications have been received for the examination which was to have been held on July 6 for the position of laboratory assistant in physics at the national bureau of standards, as announced in this Journal several weeks ago. There are two vacancies to be filled as a result of this examination, one paying \$1,200 and the other \$1,400 a year. These openings are extremely desirable, as the work is largely research and the way is open for promotion.

THE civil service commission announces that it is desired to establish an eligible register

for the position of assistant physicist. It will not be necessary for applicants to appear at any place for examination. The examination will consist of the subjects mentioned below which will be weighted as follows :

Subjects.	Weights.
Education and training, with particular reference to the subjects of mathematics and chemistry.....	20
Experience in general laboratory manipulation, including glass-blowing, photography and assembling and making apparatus.....	10
Experience in advanced quantitative measurements, including determination of physical constants, comparison with standards, etc.....	20
Experience in original experimental research, particularly that relating to the physics of solutions and of finely divided solids. (In connection with this subject will be considered the various theses of published papers concerning investigations or experiments which the applicant has directed or assisted in).....	40
Training in mathematical physics. (This subject will include the consideration of theses of published papers on this line of work).....	10

From the eligibles resulting from this examination it is expected that certification will be made to the position of assistant physicist, Bureau of Soils, Department of Agriculture, at a salary of \$1,600 per annum, and to other similar vacancies as they may occur.

WE learn from the *Electrical World* that *L'Eclairage Electrique* is organizing a technical excursion to the United States to visit the Pan-American Exhibition in Buffalo, and to attend at the same place the convention in August of the American Society of Electrical Engineers. The party will leave Paris Aug. 3, arrive at New York Aug. 11, and leave for Philadelphia the same day. Aug. 13 will be spent in Washington, and the party will remain in New York from the 14 to the 18. The program from the 18 to the 26 coincides with that of the American Institute of Electrical Engineers. From Buffalo the party will go to Chicago, and from that city by way of the Lakes and the St. Lawrence River to Montreal and Quebec, returning to New York on Sept. 3, and sailing from the latter city Sept. 5.

CONCERNING the influence of chemical trans-

formation on weight, Lord Rayleigh writes to *Nature* as follows: Careful experiments by Heydweiller, published in the last number of Drude's *Annalen* (Vol. V., p. 394), lead their author to the conclusion that in certain cases chemical action is accompanied by a minute, but real, alteration of weight. The chemical actions here involved must be regarded as very mild ones, *e. g.*, the mere dissolution of cupric sulphate in water, or the substitution of iron for copper in that salt. The evidence for the reality of these changes, which amount to 0.2 or 0.3 mg., and are accordingly well within the powers of a good balance to demonstrate, will need careful scrutiny; but it may not be premature to consider what is involved in the acceptance of it. The first question which arises is: Does the *mass* change as well as the *weight*? The affirmative answer, although perhaps not absolutely inconsistent with any well-ascertained fact, will certainly be admitted with reluctance. The alternative—that mass and weight are not always in proportion—involves the conclusion, in contradiction to Newton, that the length of the seconds' pendulum at a given place depends upon the material of which the bob is composed. Newton's experiment was repeated by Bessel, who tried a number of metals, including gold, silver, lead, iron, zinc, as well as marble and quartz, and whose conclusion was that the length of the seconds' pendulum formed of these materials did not vary by one part in 60,000. At the present day it might be possible to improve even upon Bessel, or at any rate to include more diverse substances in the comparisons; but in any case the accuracy obtainable would fall much short of that realized in weighings. As regards Heydweiller's experiments themselves, there is one suggestion which I may make as to a possible source of error. Is the chemical action sufficiently in abeyance at the time of the first weighing? If there is copper sulphate in one branch of an inverted U and water in the other, the equilibrium can hardly be complete. The water all the time tends to distil over into the salt, and any such distillation must be attended by thermal effects which would interfere with the accuracy of the weighing.