

material, highway traffic analysis, highway finance, highway maintenance and also a report of the special investigation on reinforcement in concrete roads.

Research apparatus that has been successfully used in various experiments will be on display. This exhibit will not only include the apparatus used in laboratories, but will include also various loadometers, traffic counters and other instruments in use on the road.

On the evening of December 4, Mr. Herbert Hoover, secretary of the Department of Commerce, will speak at the highway research dinner.

This is the one meeting of the year where there is a rounded discussion of the practical application of highway research. Highway executives and engineers will find this meeting to be one of intense interest because of the correlation of research and practise.

THE CARNOT CENTENARY

THE one hundredth anniversary of the announcement by the French physicist and engineer, Nicholas Leonard Sadi Carnot, of the principle of thermodynamics, later known as the second law of thermodynamics and the Carnot cycle, will be celebrated by American engineering, physical and chemical societies and educational institutions of New York, at a meeting to be held under the auspices of the Engineering Foundation, on December 4 at 8:15 p. m., in the auditorium of the Engineering Societies Building.

The program will be as follows:

Dr. Wm. F. Durand, president-elect, American Society of Mechanical Engineers, will preside.

Addresses, Illustrated by Lantern:

Dr. Michael I. Pupin, professor of electromechanics of Columbia University; fellow of the American Institute of Electrical Engineers; member, American Physical Society, National Academy of Sciences and the National Advisory Committee for Aeronautics, will speak on "Carnot's principle."

Dr. William LeRoy Emmet, consulting engineer of the General Electric Company; member, American Institute of Electrical Engineers, Society of Naval Architects and Marine Engineers, National Academy of Sciences and the Naval Consulting Board, will speak on the "Application of Carnot's principle in engineering."

Cooperating Institutions and Societies:

American Society of Civil Engineers.

American Institute of Mining and Metallurgical Engineers.

American Society of Mechanical Engineers.

American Institute of Electrical Engineers.

Engineering Foundation.

American Physical Society.

American Chemical Society.

Columbia University.

New York University.

Stevens Institute of Technology.

College of the City of New York.
Polytechnic Institute of Brooklyn.
Pratt Institute.

Cooper Union for the Advancement of Science and Art

Committee of Arrangement:

American Society of Civil Engineers, George H. Pegram.

American Institute of Mining and Metallurgical Engineers, W. L. Saunders.

American Society of Mechanical Engineers, Joseph W. Roe.

American Institute of Electrical Engineers, L. W. W. Morrow.

Columbia University, George B. Pegram, Walter I. Slichter, Walter Rautenstrauch.

SCIENTIFIC NOTES AND NEWS

DR. THOMAS HUNT MORGAN, professor of zoology at Columbia University, has been awarded the Darwin medal of the Royal Society of London, for his work in zoology, and especially for research in heredity.

DR. HIDEYO NOGUCHI, of the Rockefeller Institute for Medical Research, New York, was elected corresponding member of the Accademia Medico-Fisica Fiorentina at the centenary celebration of its founding in May, 1924. The French government has conferred on him the decoration of Chevalier de la Légion d'Honneur.

DR. ÉMILE ROUX and Dr. Louis Marten, of the Pasteur Institute; Professor Roger, dean of the faculty of medicine; Inspector-General H. Vincent, and Professors Achard, Carnot, Legueu and Widal, of Paris, have been elected honorary foreign members of the Academy of Medicine of Rome.

THE Alvarenga Prize of the College of Physicians of Philadelphia, for 1924, has been awarded to Dr. Gordon Cameron, Victoria, Australia. His subject was "Pancreatic anomalies; their morphology, pathology and clinical history."

A. V. VASSILIEV, formerly professor of mathematics at the Universities of Kazan and Petrograd, will celebrate in Moscow the fiftieth anniversary of his teaching activity on December 12.

PROFESSOR C. O. BATES, head of the department of chemistry at Coe College, is retiring under the Carnegie Foundation. He will continue his work as chemist for the city of Cedar Rapids, Iowa.

DR. E. J. LUND, associate professor of physiology in the University of Minnesota, has been named as an occupant of the American Association table at the Naples Zoological Station, for the period from December 10 to February 1 next.

DR. GEORGE E. BREWER has been nominated for the

presidency of the New York Academy of Medicine, in succession to Dr. George Stewart, whose term expires in December. Dr. Charles A. Elsberg and Dr. Frederick Van Buren were placed in nomination for vice-president.

DR. BENJAMIN T. BROOKS has been appointed chairman of a committee of the National Research Council to investigate the chemistry of petroleum.

PROFESSOR JAMES KENDALL, of the department of chemistry, Columbia University, has been reenrolled as a specialist in the United States Naval Reserve Force, with promotion to the rank of lieutenant-commander.

DR. J. V. HOFMAN, formerly director of the Wind River Forest Experiment Station, Washington, has accepted the position of assistant director of the Pennsylvania State Forest School at Montalto.

DR. A. T. LARSON and Dr. R. L. Dodge have left the Fixed Nitrogen Research Laboratory to take up work with the du Pont Company.

DR. W. A. ORTON has resigned as pathologist in charge of the office of cotton, truck and forage crop disease investigations in the U. S. Bureau of Plant Industry, to become scientific director and general manager of the Tropical Plant Research Foundation. Dr. Orton entered the service of the Department of Agriculture in 1899.

DR. H. FOSTER BAIN, director of the Bureau of Mines, will sail from the United States for Argentina on November 22 to make an extended study of the development of the steel and iron industry at the request of the Argentina government.

On the occasion of the dedication of the Cornelia Clapp Laboratory at Mount Holyoke College, which took place in connection with the celebration of the eighty-seventh anniversary of the founding of the college, an address was given by Professor Edwin Grant Conklin on "Biology and human life." Dr. Clapp spoke of her fifty years teaching at the college and of the early days of the department of zoology of which she was the founder.

PROFESSOR CHARLES FABRY, director of the Institute of Optics, Paris, delivered an address on November 15, on "Thirty years work in spectroscopy with the interferometer" before a joint meeting of the Washington Academy of Sciences and the Philosophical Society of Washington.

DR. THORVALD MADSEN, director of the State Serum Institute of Denmark, will deliver the fourth Harvey Society lecture at the New York Academy of Medicine, on Saturday evening, November 22. His subject will be "Temperature and immuno-chemical reactions." The fifth Harvey Society lecture will be

delivered by Dr. Willem Einthoven, professor of physiology in the Royal University of Leyden, Holland, on Saturday evening, December 6. His subject will be "The relationship of mechanical and electrical phenomena of muscular contraction with special reference to the cardiac muscle."

DR. OTTO WARBURG, of the Kaiser Wilhelm Institute of Biology, Berlin (Dahlen), has recently given two lectures before the scientific staff of the Rockefeller Institute for Medical Research, New York, "On the metabolism of carcinoma cells" and "Iron as an oxygen carrier of the respiration ferment." The lectures were followed by laboratory demonstrations of his methods of studying tissue respiration.

DR. HARRISON E. HOWE, editor of *Industrial and Engineering Chemistry*, gave a lecture at the Franklin Institute, on November 19, on "The trend and purpose of modern research."

THE seventh public lecture of a series on Physics in industry was on "Electrical precipitation," and was delivered by Sir Oliver Lodge on October 29, at the Institution of Electrical Engineers, London. The chair was taken by Sir Charles Parsons, president of the institute.

THE seventh public lecture of a series on physics was delivered on November 6, at the Finsbury Technical College, London, by Julian L. Baker, who spoke on "The chemist and the fermentation industries."

THE Thomas Hawksley lecture of the Institution of Mechanical Engineers, England, was delivered at the institution on November 7, by Vice-Admiral Sir George G. Goodwin. The subject was "The trend of development of marine propelling machinery."

THE Bradshaw Lecture of the Royal College of Surgeons of England on "Some clinical aspects of carcinoma of the breast" was delivered by Dr. Raymond Johnson on November 6, and the Thomas Vicary Lecture on "Sir Richard Owen as conservator" was given by Sir Arthur Keith, on November 12.

PROFESSOR H. B. DIXON, honorary professor of chemistry in the University of Manchester, delivered the inaugural lecture on "The life and work of Ludwig Mond" at the University of Manchester on October 20.

THE bronze bust of Dr. William H. Sanders, for many years professor in the department of medicine at the University of Alabama, has been given to the state of Alabama by the Alabama State Medical Association. It will be mounted at the entrance of the state health department building at Montgomery.

IN connection with the celebration of the centennial of the founding of the Medical College of South

Carolina, there was unveiled on November 12 a memorial tablet to Dr. Frank L. Parker, late professor of anatomy and dean of the medical college.

DR. THOMAS L. WATSON, Corcoran professor of geology at the University of Virginia and state geologist of Virginia, known for his contributions to mineralogy, petrology and economic geology, died on November 10 at the University of Virginia, aged fifty-three years.

NED HOLLISTER, superintendent of the National Zoological Park since 1916, a leading mammalogist, died on November 3, aged forty-eight years.

SIR ARCHIBALD GEIKIE, for many years director-general of the Geological Survey of the United Kingdom and former president of the Royal Society, the British Association for the Advancement of Science and the Geological Society of London, has died at the age of eighty-nine years.

DR. E. G. DEVILLE, director-general of surveys, Canada, died recently at the age of seventy-five years.

CHARLES FERGIE, ex-president of the Canadian Mining Institute, and a well-known mining engineer, died recently in his sixty-seventh year.

DR. J. E. CAMPBELL, F.R.S., lecturer in mathematics at the University of Oxford, has died, aged sixty-two years.

PROFESSOR DR. THEODOR KOCH-GRUNBERG, of the Ethnological Museum at Stuttgart, has died of malaria contracted while carrying on ethnological explorations in South America.

A DESIGN for a monument to Louis Pasteur has been submitted to the Pasteur memorial committee in Chicago by Leon Hermant, a French sculptor residing at the present time in Chicago. A sum of \$100,000 is being raised with which to erect the memorial, and to endow a research scholarship that will be open to all American students. The monument design is a terraced fountain surmounted by a column which supports a bust of Pasteur. Clinging to the column are various supplicating human figures reaching up to receive healing from the great benefactor.

THE United States Civil Service Commission announces an examination for assistant scientist (apicultural physiologist), to fill a vacancy in the Bureau of Entomology, Department of Agriculture, Washington, D. C., at an entrance salary of \$2,400. Receipt of applications closes on December 2. An examination is also announced for associate ordinance engineers with entrance salaries ranging from \$3,000 to \$3,600. Receipt of applications will close on December 16.

OFFICERS elected at the recent meeting of the Asso-

ciation of Official Agricultural Chemists were: Dr. C. A. Browne, chief of the Bureau of Chemistry, *president*; H. D. Haskins, Amherst, Mass., *vice-president*; Dr. W. W. Skinner, assistant chief of the Bureau of Chemistry, *secretary-treasurer*. The new members of the executive committee are Dr. W. W. Randall, of Baltimore, and Dr. W. H. MacIntire, of Knoxville. New members of the committee on recommendations of referees are H. A. Leppar, Dr. E. M. Bailey and Dr. A. G. McCall.

A SPECIAL joint meeting of the Helminthological Society of Washington and the Entomological Society of Washington was held on October 31, in the National Museum, Washington, D. C., in honor of Professor E. Brumpt, head of the laboratoire du parasitologie at the University of Paris. Dr. W. W. Cort, president of the Helminthological Society, acted as chairman, and Dr. C. W. Stiles, of the U. S. Public Health Service, introduced the guest of honor. Professor Brumpt outlined the organization of the laboratoire du parasitologie of the École de Médecine at Paris, which includes the following divisions: (a) mycology, (b) nematodes, (c) cestodes and trematodes, (d) protozoa, (e) insects, (f) culture of trypanosomes and other parasitic protozoa and (g) leeches, each section being assigned to a different worker. Professor Brumpt also touched upon investigations that are being conducted in his laboratory and emphasized especially the work on the transmission of trypanosomes of cold-blooded vertebrates by leeches, the rearing of ticks and other arthropod vectors of protozoan diseases, studies on strongyloides of various animals, and studies on anaplasmosis of cattle. Dr. L. O. Howard, chief of the Bureau of Entomology, made the closing remarks.

It has been previously announced that the First International Congress of Mental Hygiene would be held in this country during the year 1925, if a fund adequate for the purpose could be secured by mid-summer of 1924, since it would take a year at least to organize and arrange for the congress. Widespread interest in this project exists, but this interest has not yet expressed itself in the form of adequate financial support. In consequence, the holding of the congress must be postponed. The organizing committee in charge of the plan hopes to secure an adequate fund in time to hold the congress in 1926. Interest in the project continues to grow, as does the number of national leagues and committees for mental hygiene that will participate when the congress is held. Such societies have already been organized in Belgium, Brazil, Canada, Czecho-Slovakia, Denmark, France, Great Britain, Hungary, Italy, South Africa and the United States, and are in process of formation in Australia, China, Germany, Greece, Holland, Japan, Luxemburg, Norway, Sweden and Switzerland.

CLOUDY conditions at Arequipa, Peru, during the months of December and March, preventing satisfactory observations, have led to the establishment of a new branch of the Harvard Observatory at San José, Peru, halfway between Arequipa and the Port of Mollendo. Dr. J. S. Paraskevopoulos, who is in charge of the Boyden Station at Arequipa, opened the temporary station of the new branch at San José, on November 1. The site selected is 4,850 feet above sea level, and has been chosen because at this elevation there has been found to prevail a nearly cloudless belt of sky even when at the same time Arequipa at its 8,000 feet of altitude is cloud-bound and Mollendo at its proximity to sea level is covered with low-hung clouds. Thus San José, set in the broad pampa between, on the other hand, gives promise of yielding excellent and dependable observing conditions. Dr. Paraskevopoulos will set up two telescopes at San José, a one-inch and a three-inch, both photographic telescopes, to be used in the Harvard Sky Patrol, which was begun in a systematic manner over forty years ago.

A CONTRACT has been awarded by the General Electric Company, Schenectady, for a five-story annex to the research and general engineering laboratory, costing approximately \$550,000. The new building will be of reinforced concrete with brick veneer and will provide 115,000 square feet of floor space.

THE *Journal of Medical Research*, official organ of the American Association of Pathologists and Bacteriologists, will change its name to the *American Journal of Pathology*, January, 1925. According to the *Journal* of the American Medical Association it has been given a subsidy of \$7,500 a year for five years for the distinct purpose of helping pathology regain the prominence it formerly held as a fundamental branch of medicine, and to encourage young men of the best type to take up pathology as a career. The *American Journal of Pathology* will be published under the management of the present editorial board and will appear bimonthly. It will be restricted to pathology, especially the morphologic side.

COLUMBIA UNIVERSITY and the insular government of Porto Rico have established a school of tropical medicine at San Juan, Porto Rico, under the administration of Columbia University. According to the *Journal* of the American Medical Association the school was opened on September 25. Pending the reorganization of the Institute of Tropical Medicine and the erection of a laboratory building in San Juan, the courses in the fundamental biologic and chemical subjects will be given at Columbia University, New York. The courses in clinical medicine and

surgery, preventive medicine, public health and sanitation, beginning on January 5, will be given in Porto Rico by members of the Institute of Tropical Medicine, the department of health, the Presbyterian Hospital of San Juan, and by members of the hookworm and malaria stations of the International Health Board. The courses will include laboratory work, clinical teaching and the demonstration of sanatorium machinery in action. Clinical material will be available at the Municipal Hospital of San Juan, which has set apart two wards for the exclusive use of the school; at the Presbyterian Hospital of San Juan, with a capacity of seventy-five beds and an active dispensary service of about 4,000 cases a month; and at the various special hospitals and dispensaries of the department of health which is actively cooperating in the project. The last month of the course will be given over to a medical expedition into the mountains of Porto Rico. The course is open to qualified graduates in medicine and will cover a period of eight months. The cost of living at San Juan will range from \$100 to 150 a month. Registration will be limited to twenty students. Inquiries should be addressed to the dean of the Columbia University School of Medicine.

ACCORDING to *Nature*, a survey of the Great Barrier Reef area has been undertaken by the Commonwealth Government of Australia, and the naval sloop *Geranium* has been detailed for the work. The vessel will have a seaplane attached for general help and work in the survey, and a preliminary flight around the coastline of Australia was recently completed with the view of deciding the kind of assistance which can best be afforded from observations in the air. The commander of the *Geranium* is a member of the Barrier Reef Committee of the University of Queensland, and he will take with him two scientific investigators attached to the committee.

THE Fremont Forest Experiment Station, which was established by the United States Department of Agriculture at Colorado Springs, Colorado, is celebrating its fiftieth anniversary this year. The second of its kind in the western forest regions of the country, it has for a number of years been conducting experiments with trees similar to those made with agricultural crops and garden plants at agricultural experiment stations. The field depot of the station is on Mount Manitou. Besides these laboratory experiments, a considerable part of the work of the station is distributed over the national forests of Colorado, Wyoming, South Dakota and Nebraska, where field tests are made and permanent plots established to determine the best reforestation practices, the rate of

growth of stands, the best methods for thinning stands and for obtaining natural regeneration of forests. In some localities the relation of grazing to forest regeneration is receiving attention.

UNIVERSITY AND EDUCATIONAL NOTES

THE estate of the late J. Stephen Tripp, amounting to some \$550,000, "to be used as the regents see fit," has come into the hands of the University of Wisconsin, as a result of the death of the last beneficiary.

FIRE at Earlham College has destroyed the administration building and part of the museum. The damage done is estimated to be \$250,000, in addition to the loss of many scientific records.

THE Ramsay Laboratory of Chemical Engineering at University College, London, was opened on November 12.

PROFESSOR GUIDO H. MARX this year succeeds Professor William F. Durand, retired, as head of the department of mechanical engineering at Stanford University.

DR. WILLIAM PINKERTON OTT, associate professor of mathematics at Vanderbilt University, has been appointed head of the department of mathematics at the University of Alabama.

DR. P. M. GINNINGS has resigned as professor of chemistry at Centenary College of Louisiana, to become professor of chemistry at North Carolina College for Women. His place at Centenary College will be taken by Dr. Albert Salathe, professor of chemistry at Sweet Briar College, Virginia.

DR. CARL ARTHUR HEDBLÖM, of the Mayo Clinic, Rochester, Minn., has been appointed chief surgeon of the Wisconsin General Hospital, and professor of surgery at the University of Wisconsin Medical School, Madison.

L. P. McCANN has been appointed associate professor of animal husbandry at Colorado Agricultural College to succeed Professor B. W. Fairbanks.

DR. EARL D. MACPHEE, of the University of Alberta, has accepted an appointment in the department of psychology at the University of Toronto.

PROFESSOR LUCATELLO, of Padua, has been nominated successor of Professor Maragliano in the chair of internal medicine at Genoa.

PROFESSOR ANDREW ROBERTSON, professor of mechanical engineering in Bristol University, has been appointed principal of Bristol Merchant Venturers Technical College, in succession to the late Dr. Wertheimer.

DISCUSSION AND CORRESPONDENCE THE QUANTUM NUMBERS OF THE BOHR ORBITS IN THE ALKALI ATOMS

IN a recent article, Dr. L. A. Turner¹ proposes a change in the assignment of quantum numbers to the orbits in certain atoms, as given by Bohr in his latest theory.² This applies particularly in the principal quantum numbers assigned to the outermost orbits in the heavier alkali atoms and alkaline earth ions. The essential features of the proposed change may be indicated briefly in the following table:

Element	N	n*	n _B	n _T	q _B	q _T
Li	3	1.59	2	2	.41	.41
Na	11	1.63	3	3	1.37	1.37
K	19	1.77	4	4	2.23	2.23
Rb	37	1.81	5	6	3.19	4.19
Cs	55	1.87	6	8	4.13	6.13

In the above table, N denotes the atomic number, n* the effective quantum number of the outermost orbit in the atom, n_B the corresponding principal quantum number as assigned by Bohr, n_T, the same as assigned by Turner, while q_B and q_T are the corresponding quantum defects (differences between n* and n) on the two points of view, respectively. It will be seen that Turner proposes to increase Bohr's principal quantum numbers for the orbits in Rb and Cs by *one* and *two*, respectively. His reason for this step is based on an examination of the variation of the quantum defect with N. For he finds that if we plot q as a function of N, using the Bohr values, we get a broken line with the break occurring at K (as will be seen from an inspection of the table), while if we plot q as a function of N, using Turner's values, we get a very nearly straight line. (It must here be remarked that this also applies to the corresponding case in the ionized alkaline earths and certain other atoms). No theoretical reason can apparently be assigned to the straightness of this line. The present writer wishes to examine available evidence as to the justification of Turner's new assignment.

Numerical calculations have been carried out by the writer³ for the dimensions of the orbits in the Bohr models of the alkali atoms. These show conclusively that Bohr's assignment of the quantum numbers for the outermost orbits is the only one which yields the correct values of the effective quantum numbers, provided, of course, that the *inner* groups of orbits remain as assigned in the Bohr theory. In fact, a short calculation on the basis of the results there obtained indicates that the assumption of n = 6 in-

¹ L. A. Turner, *Phil. Mag.*, Sept., 1924.

² See particularly N. Bohr, *Ann. d. Phys.*, 71, 228, 1923.

³ *Proc. Amer. Phys. Soc.* 23, 552 (A8) 1924. For complete details of calculations see *Jour. of Math. and Phys.*, Mass. Inst. Tech. III, 191, 1924 (May).