600. The average harem, based on a count of seven rookeries, was 26.76. The census was of date of August 10, and did not include the 33,881 seals taken during the present calendar year.

Reports have been received from the superintendent and physician, United States Indian Service, Neah Bay, Wash., that he has authenticated 386 fur-seal skins taken this season by Indians dwelling on the coast of Washington. The seals were all speared from canoes and were taken from 10 to 25 miles west of La Push, Wash. The records show that 379 of the skins were taken in April, May and June, 1918, and that 245 of the seals were males and 139 females. The superintendent also stated that a few skins remain untagged, and a report on the number will be made at the close of the season.

The lighthouse tender *Cedar,* which had on board some of the heavier portions of the equipment for the new by-products plant for St. Paul Island arrived at the island on August 11. The material was successfully landed, and ground for the foundation of the plant was broken on the 14th. The balance of the equipment for the plant was delivered by the *Roosevelt* in August. The active sealing operations were over by the 10th, thereby permitting the energies of the station to be devoted largely to the erection of the plant. It is hoped to push the work of constructing the buildings and installing the machinery rapidly to completion and to begin the manufacture of oil and fertilizer from seal carcasses this season. The carcasses of approximately 27,000 seals which have been killed on St. Paul Island this year will furnish ample material for preliminary operations.

RESEARCH GRANTS FROM TRUST FUNDS OF THE NATIONAL ACADEMY OF SCIENCES

DURING the twelve months preceding the annual meeting of the academy the following grants for the promotion of research were made from the trust funds of the academy.

GRANTS FROM THE BACHE FUND

No. 205, T. H. Goodspeed, University of California, $100. For studies of inheritance in *Nicotiana* hybrids.

No. 206, Reginald A. Daly, Harvard University, $700. For the completion of the deep sea thermograph designed and partly constructed under Grant No. 194. In continuation of No. 194.

No. 207, T. H. Gronwall, New York City, $300. To complete and extend mathematical researches on conformal representation.

No. 208, A. Franklin Shull, University of Michigan, $400. To investigate the cause of sex production and the life cycle of rotifers, together with artificial modification of life cycle; differential factors in fertilization of male-producing and female-producing rotifers; sex determination and the life cycle of the thrips; cause of sex production, wing production and other cyclical phenomena in aphids.

No. 209, Cecil K. Drinker, Harvard Medical School, $350. For the closer study of the factors involved in extension of unchecked red cells and leucocytes in the dog.

GRANTS FROM THE WATSON FUND

No. 16, Herbert C. Wilson, Goodsell Observatory, $300. For a continuance of the work of the determination of the position and brightness of asteroids (chiefly those discovered by Watson by the photographic method, together with a study of the brightness of some variable stars. (Supplementary to Grant No. 15.)

No. 17, John A. Miller, Sproul Observatory, $500. To measure plates for determining stellar parallaxes. (Supplementary to Grant No. 14.)

GRANTS FROM THE J. LAWRENCE SMITH FUND

No. 9, S. A. Mitchell, University of Virginia, $300. To continue his researches on the paths, radiants and orbits of meteors. (Supplementary to Grant No. 8.)

GRANT FROM THE MARSH FUND

No. 2, M. Ferdinand Canu, Versailles, France, $250. For investigation in cooperation with Dr. R. S. Bassler, of the United States National Museum, of the early tertiary bryozoa of North America.

SCIENTIFIC NOTES AND NEWS

PROFESSOR ERNEST FOX NICHOLS, of Yale University, has been given further leave of absence to continue his work in the Ordnance Department.

LIEUTENANT COLONEL DR. JOHN M. T. FINNEY, surgeon-in-chief of the American Expeditionary Forces, on his recent visit to the United States laid plans before the President

for the establishment of hospitals for the treatment of shell shock. The necessary funds have been provided and Dr. Finney has returned to France.

A MISSION headed by Colonels Combe and Dr. Lure has been sent to France by the Canadian government for the purpose of studying the measures that have been taken in reconstruction work among the maimed and the invalided.

PROFESSOR HIRAM BINGHAM, of Yale University, who is a lieutenant colonel in the Aviation Section, Signal Corps, of the Regular Army, has been appointed chief of the Personnel Section in the office of the Chief of the Air Service, American Expeditionary Forces.

DR. RALPH G. VAN NAME, of Yale University, has qualified as chemist in the government service.

CHARLES V. BACON was commissioned a captain in the Engineer Reserve Corp on July 2 and is now stationed at the General Engineer Depot, Washington, D. C., in the Division of Investigation Research and Development, being a member of the executive committee. Captain Bacon was formerly associated with the American University Experiment Station as chief of the section on flaming liquids, and later as chief of the section on oil research.

CHAS. N. JORDAN, formerly instructor in chemistry, Marvin College, Fredericktown, Mo., is now engaged in chemical and metallurgical work for the Ordnance Department.

DR. R. E. NELSON has resigned his instructorship in chemistry at Purdue University to accept an appointment as assistant gas chemist in the Research Division, Chemical Warfare Service, American University Experiment Station, Washington, D. C.

AT the Oregon Agricultural College, Dr. A. C. Chandler, assistant in the department of zoology, and F. H. Lathrop, research assistant in entomology, have received commissions as second lieutenants in the Sanitary Corps and have been granted leave of absence for the duration of the war.

PROFESSOR C. K. LEITH, of the University of Wisconsin, has been appointed mineral adviser to the War Industries Board from the standpoint of the conservation of shipping.

PRESIDENT KENYON BUTTERFIELD, of the Massachusetts Agricultural College, has become a member of the Army Educational Commission appointed to provide educational opportunities for the American Expeditionary Forces.

DR. R. A. PEARSON has resigned as assistant secretary of agriculture so that he may resume his duties as president of the Iowa State College of Agriculture. He will be succeeded by G. I. Christie.

AT the Bureau of Fisheries Glen C. Leach, field superintendent, has been promoted to the position of assistant in charge of the division of fish culture, in succession to Henry O'Malley.

MR. HENRY M. EAKIN, formerly with the Alaska Division of the U. S. Geological Survey, has entered the employment of a large lumber company in Alger, Washington, as topographer and forester.

DR. R. P. CALVERT has been transferred from the position of head of the general chemical division of the Experimental Station, Wilmington, Del., to that of director of Delta Laboratory, Arlington, N. J. Both laboratories are under the direction of the chemical department of E. I. du Pont de Nemours & Company.

CHARLES S. REWE, chemist of the United States Office of Public Roads and Rural Engineering, has entered the Research Department of the Barrett Company, New York City.

N. H. DARTON, of the United States Geological Survey, spent August and September in New Mexico continuing his investigation of stratigraphy of the Red Beds especially as to their prospects for containing potash deposits.

PROFESSOR MAXWELL-LOFROY, professor of entomology at the Imperial College of Science, London, has accepted a year's engagement with the Commonwealth Government for £3,000, plus £2,000 for experiments. He will investigate the blowfly, the grain weevil, the woolly aphis, prickly pear and the St. John's wort.

DR. C. CHILTON, professor of biology at Canterbury College, New Zealand, has been elected an honorary member of the Royal Society of New South Wales.

PROFESSOR AARON NICHOLAS SKINNER, formerly professor of mathematics at the U. S. Naval Academy and assistant astronomer of the Naval Observatory, died on August 14, in his seventy-fourth year.

MR. ROBERT CHRISTIAN MCKINNEY, for many years a member of the topographic branch of the U. S. Geological Survey, has died on July 27, at the age of sixty-two years.

COLONEL BERTRAM HOPKINS, professor of mechanism and applied mechanics in Cambridge University, died on August 26 in an aeroplane accident.

PROFESSOR O. HENRICI, F.R.S., emeritus professor of mechanics and mathematics in the Central Technical College of the City and Guilds of London Institute, died on August 10, at the age of seventy-eight years.

STONEHENGE, the famous Druid monument, which has always been in the hands of private owners, has been presented to the British nation by C. H. E. Chubb, who purchased it in 1915.

THE statutory meeting of the general committee of the British Association for the Advancement of Science, was held in London in July, and at this meeting much disappointment was expressed that for the second year in succession it has been found impossible to arrange for an ordinary meeting. A resolution was passed unanimously asking the council to arrange for a meeting in London next year, if it should prove impossible to arrange to meet at Bournemouth. The question as to the type of meeting which it was desirable to hold was left to the council to decide.

THE Illuminating Engineering Society will hold its annual convention at the Engineering Societies Building, New York, on October 10, 1918. War-time lighting economies, the use of better lighting in speeding up war production and manufactures, the lighting of camps, effect of lighting curtailment on crime, and automobile headlight laws will be discussed.

THE Association of American Agricultural Colleges and Experiment Stations will hold its thirty-second annual convention at the Southern Hotel, Baltimore, Md., November 13–15.

THE council of the Royal Microscopical Society announces that the high cost of printing and the growing scarcity of paper have compelled them to reduce the issue of the *Journal* to four numbers per annum instead of six. The revenue account of the society for 1917 showed an excess of expenditure over income of £141.

THE committee of organization for the South American Conference on Hygiene, Microbiology and Pathology, to be presided over by Professor Couto, has decided on Rio de Janeiro for the inaugural session. It will convene on October 15. The previous meeting was held at Buenos Aires in September, 1916.

THE *Journal* of the American Medical Association states that the commission sent by the National Public Health Service to study epidemic diseases in northern Argentina is under the leadership of Professor Kraus, director of the Instituto Nacional Bacteriologico. The other members of the commission are Drs. de la Vega, Battaglia, Barbara, and Fischer, with several bacteriologists, *guardas sanitarios* and attendants. The epidemic of pneumonia at Jujuy has almost completely died out, but the mortality reached 30 per cent. In the Galpon and Molinos districts there have been cases suspicious of bubonic plague and the commission is to investigate these foci. A large squadron is equipped for rat destruction at these places. The main interest for the expedition, however, is the investigation of typhus, for exanthematous typhus has never been reported before in Argentina. The suspicious cases which the commission is to study have occurred at Iruya, near the frontier of Bolivia, in a poor, mountainous zone with little communication with the outside.

Nature states that the position of Great Britain as regard the supply of optical glass at the outbreak of the war is often not clearly understood. Optical glass has been manufac-

tured in this country since 1848 by Messrs. Chance Bros., and Co., Birmingham. When the supply of German glass was cut off in 1914, the experience gained by this firm became an important national asset, and through it an acute situation was saved. Messrs. Chance have supplied nearly the whole of the optical glass required for instruments used by British forces during the war, and also much of the requirements of the Allies, without any assistance from the formula determined by the Glass Research Committee of the Institute of Chemistry. This committee rendered invaluable aid to the manufacture of scientific and heat-resisting glassware, but the needs of optical-instrument makers were met independently by Messrs. Chance, whose output since the outbreak of hostilities has increased twenty-fold. Without their seventy years' experience it would have been very difficult to have produced the supply of optical glass imperatively demanded by conditions of war.

President Wilson has issued a proclamation establishing three new national forests in the East—the White Mountain, in Maine and New Hampshire, the Shenandoah, in Virginia and West Virginia, and the Natural Bridge, in Virginia. The White Mountain National Forest is located in Grafton, Carroll and Coos counties, N. H., and Oxford county, Me. The Government has actually taken title to about 267,000 acres, and in addition about 124,000 acres more have been approved for purchase, making a total of about 391,000 acres under Federal protection. This forest protects in part the watersheds of the Androscoggin, Saco, Connecticut and Ammonoosuc rivers. The Shenandoah National Forest is situated in Rockingham, Augusta, Bath and Highland counties, Va., and Pendleton county, W. Va. The government has acquired to date slightly in excess of 100,000 acres and an additional area of approximately 65,000 acres has been approved for purchase, making a total of approximately 165,000 acres under Federal protection. The forest is for the most part on the watershed of the Shenandoah river and it also protects a portion of the watersheds of the Potomac and the James. The Natural Bridge National Forest is situated in Rockingham, Nelson, Amherst, Botetourt and Bedford counties, Va. The federal government has actually acquired title to a little over 73,000 acres, and an additional area of approximately 29,000 acres has been approved for purchase. The forest, which protects a portion of the watershed of the James river, does not include the Natural Bridge, but this scenic feature is within three or four miles of the boundary.

As a means of combating tuberculosis and other communicable diseases besides elevating the general health conditions throughout the state, the Oklahoma Association for the Prevention of Tuberculosis is conducting a series of general surveys of cities throughout the state. The surveys are in charge of Mr. P. Horowitz, of the department of biology and public health, Massachusetts Institute of Technology, and Dr. Gayfree Ellison, professor of bacteriology and hygiene of the University of Oklahoma. The investigators are assisted by members of the executive and nursing staff of the State Association, as well as by the staff of the State Board of Health and the Board of Argiculture. The surveys, which began on April 1, are continued through the month of September. The following towns are included in the study: Oklahoma City, Tulsa, Muskogee, Enid, Shawnee, Bartlesville, Ardmore, Chickasha and McAlester.

The United States Bureau of Education has recently issued a Union List of Mathematical Periodicals prepared by Professor David Eugene Smith and Dr. Caroline Eustis Seely. This list contains the leading mathematical periodicals needed by research students and to be found in a number of the larger libraries in various parts of the country. Copies may be secured by addressing the United States Commissioner of Education, Washington, D. C.

A historical sketch of the observatory of the University of Cincinnati has recently been written by Dr. J. G. Porter, director of the observatory. The Cincinnati Observatory has been in operation since 1843, when it was

established by Professor O. M. Mitchell, professor of astronomy in the old Cincinnati College. Through the generosity of Nicholas Longworth a site for the observatory was secured and telescopes were mounted in 1845. In 1873 the observatory was made the astronomical department of the University of Cincinnati, and the present site on Mt. Lookout was donated by John Kilgour. Professor Mitchell was an innovator, publishing the first American magazine devoted to popular astronomy, and applying the principles now embodied in the chronograph to the recording of time. The scientific achievements of the observatory are well known, among them being the detection of double stars, orbits of comets, prediction of the weather and the study of nebulæ. For years the problem worked on by Dr. Porter and his assistants has been the proper motions of the stars. The few thousands of stars which show sufficient motion to be perceptible, in the interval during which astronomers have had them under observation, have been reobserved at Cincinnati and their motions carefully investigated.

UNIVERSITY AND EDUCATIONAL NEWS

STONYHURST COLLEGE, Blackburn, England, has planned to raise £20,000 as a war memorial to be devoted chiefly to the erection of new science laboratories.

COLUMBIA UNIVERSITY, at the request of the War Department, is starting an emergency course in engineering for students entering from high schools. This emergency course, embracing civil, electrical, mechanical, metallurgical and chemical engineering, will extend over two years of four quarters each. The first four quarters of the course will be devoted largely to fundamental scientific training in mathematics, physics and chemistry. The strictly engineering subjects will come in the second year. The War Department does not guarantee that any man entering on this course can remain to finish it, but those who do well will be continued in it as long as the needs of the army permit.

LIEUTENANT COLONEL CHARLES F. CRAIG, who until recently has been stationed at Fort Leavenworth, Kans., has been placed in charge of the Yale Army Laboratory School, the new school for bacteriologists and chemists which is to be conducted at Yale University during the period of the war.

DR. R. M. STRONG, professor of anatomy at Vanderbilt University, has been appointed professor and head of the department of anatomy at the Chicago College of Medicine and Surgery.

DR. JOSEPH C. BOCK, Chem. Eng. (Vienna), Ph.D. (Cornell), for five years instructor at Cornell University Medical School, has been appointed professor of physiological chemistry in the school of medicine of Marquette University at Milwaukee.

E. J. QUINN, who for the past four years has been a research chemist on the chemistry staff of the Montana Experiment Station has accepted an appointment as assistant professor in the department of chemistry of the State College of Agriculture and Mechanic Arts of the University of Montana. He will have charge of the courses in analytical and agricultural chemistry.

MR. S. H. STROUD, formerly demonstrator in chemistry in the School of Pharmacy, Bloomsbury Square, has been appointed lecturer in pharmacy and chemistry in the University of Sydney, N. S. W.

DISCUSSION AND CORRESPONDENCE

THE FOUNDATIONS OF MECHANICS

IN SCIENCE of August 2, Messrs. Franklin and MacNutt attempt to make it "clearly evident that Professor Huntington's statement (that variation in acceleration from body to body for a given force is logically derivable from the variation from force to force for a given body) is not true." "Logically derivable" is scarcely a clear phrase in this connection. The *quid* of the matter is found, of course, in the fact that in the table of Messrs. Franklin and McNutt, these authors