

Prof. Mason intends to follow up this excellent piece of work with a primitive trade-route map of the United States and Canada, including trails and portages. He will be gratified to receive information on these points from travelers and explorers, or references to where such may be found. His address is the National Museum, Washington, D. C.

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SCIENTIFIC NOTES AND NEWS.

MODERN ARMY RIFLES.

THE portions of the Governor's message of January, 1895, to the Legislature of the State of New York referring to the re-arming of the State troops; the Law passed May 10th, in compliance with its suggestions, and the rules of procedure of the New York State Board appointed to select improved arms for the militia of the State; the report of that Board, September, 1895, and the Governor's message of October 22d, relating to the report, are just published in pamphlet form by the Savage Arms Co., of Utica, N. Y., the makers of the gun selected by the Board. This makes a convenient compendium for those interested in the subject. A table is also included showing the dimensions and character of the rifles adopted for military purposes by the governments of the world; substantially all of which have adopted a small calibre, usually about 0.30 inches, and smokeless powder. The United States has accepted this specification for its army rifle, but the navy gun is of but 0.236 inches bore. Curiously enough, all of the States of the Union have armed their troops with the U. S. Springfield gun, except New York, which has the most antiquated of rifles, of large calibre; and all the militia of all the States are using black powder.

The N. Y. State Board reported in favor of a 'lever action,' in preference to the 'bolt action' adopted by all the nations of Europe, as being in all respects superior to the latter and as having the further advantage of being a generally used American invention, and hence familiar, already, to all habitual users of the rifle

in the United States. A stronger metal for barrels than heretofore employed is specified, and the study of nickel steel as a material for such guns is advised. That alloy is already adopted by the United States Navy, both for small arms and for ordnance and armor. The Board suggests the attempt to secure at least an elastic limit of 75,000 pounds per square inch, tenacity of 110,000 or 120,000 pounds, and at the same time a ductility of at least 20 per cent. in eight inches. It is thought possible to secure these figures, which would insure an extremely strong, yet light and very safe, barrel. The United States Army regulation bore, chamber and rifling are advised, in order to secure uniformity of ammunition. The Board seems doubtful whether the higher velocity, approximating 2,300 feet per second, greater range, attaining something like two miles, and higher penetrative power of the small bores used by our own navy, and by several foreign nations, is not, on the whole, compensated by more serious disadvantages in loss of 'stopping power' and difficulties of manufacture and manipulation. The gun selected has a muzzle velocity of 1,950 feet and a range of about a mile and a-half.

The use of the 'clip' for holding cartridges is not found desirable, with a satisfactory form of magazine and mechanism. The use of the gun as a single loader, with a reserve in the magazine, is thought likely to prove, in action, the usually desirable arrangement.

Twelve guns were entered for examination and report. Their behavior under test, according to the statement of the Board, "is believed to have been the most wonderful performance of new magazine rifles of different patterns of which a record is known. It was a splendid exhibition of American skill and genius in the invention of effective military magazine arms."

The report is unanimous and is signed by Messrs. Albert D. Shaw, of Watertown; E. W. Bliss, of Brooklyn, and R. H. Thurston, of Ithaca, N. Y.

GENERAL.

THE cable dispatch (see page 103 in the last number of this JOURNAL) regarding the disposition of the fortune of the late Alfred Nobel is confirmed by later advices. The annual income-

will amount to about \$300,000, and four-fifths of this sum is to be spent in four prizes for advances in science. The competition will be open to Scandinavians and foreigners on equal terms. All men of science will look forward with great interest to learning the details of this bequest—probably the most noteworthy ever made for public purposes—and the methods to be followed in awarding these great prizes.

THE widow of Baron Maurice Hirsch, of Vienna, has resolved to present about \$400,000 to the Pasteur Institute as a memorial of her husband. Part of this sum will be used for building chemical and biological laboratories.

THE will of the late Robert H. Lamborn, which bequeathes about \$200,000 to the Academy of Natural Sciences of Philadelphia, has been admitted to probate.

It was reported at the Frankfort meeting of the German naturalists and physicians that 255,000 Marks had been collected for the memorial to the eminent chemist von Hoffmann. This will be used for the erection of a building to be known as the 'Hoffmann Hausa,' to be used as the headquarters of the German Chemical Society. It is proposed to establish in it a laboratory and a library, which latter includes the books left by von Hoffmann.

THE late General Cullum left \$100,000 to the American Geographical Society, New York, for a building, and also bequeathed a further sum, to be known as the Cullum Geographical Medal Fund, for a gold medal to be given to those who should render most distinguished services to geographical science, and particularly to American citizens. The first medal has been awarded to Mr. R. E. Peary, U. S. N., for having established the insularity of Greenland.

PROFESSOR BEHRING has been awarded the Rinecker prize consisting of a gold medal and 1000 Marks by the University of Würzburg, for his discovery of the Anti-toxin treatment of diphtheria.

THE British Institute of Public Health has awarded the Harben medal for 1897 to Professor M. von Pettenkofer, emeritus professor of hygiene in the University of Munich.

THE Bressa prize of the Reale Accademie delle Scienze, of Turin, will be awarded for the

eleventh time in 1899. The prize, which is of the value of nearly \$2,000, is given for the most important scientific work produced during the years 1895-98. Competitors must send their contributions in print before the end of the present year. The academy reserves the right to award the prize to one who has not entered his name among the competitors.

A STATUE of the late Samuel Gross, the eminent Philadelphia surgeon, will be unveiled at the Triennial Congress of American Physicians, to be held in Washington in May. The statue will be in the grounds of the Smithsonian Institution, near the Army Medical Museum.

THE deaths are announced of Mr. G. F. Schacht, who made improvements in the application of certain drugs to the treatment of disease, at the age of seventy-three years; of Dr. Luigi Calori, professor of anatomy at Bologna, at the age of eighty-nine years, and of Mr. R. Warner, an English horticulturalist, at the age of eighty-two.

THE Chemical Society of Washington, at its thirteenth annual meeting, elected the following officers: President, W. D. Bigelow; Vice-Presidents, H. N. Stokes and Peter Fireman; Secretary, V. K. Chesnut; Treasurer, W. P. Cutter, and Executive Committee, C. E. Munroe, E. A. de Schweinitz, Wirt Tassin and W. G. King.

COLONEL CARROLL D. WRIGHT, United States Commissioner of Labor, has been chosen President of the American Statistical Association, at its annual meeting. The position was left vacant by the death of General F. A. Walker, who had filled it for fourteen years.

DR. G. H. SAVAGE has been elected President of the Neurological Society of London. The subject of his inaugural address, which was to have been given on January 14th, is 'Heredity in the Neuroses.'

THE London correspondent of *Garden and Forest* states that the Royal Horticultural Society continues to provide lectures for its bi-monthly meetings at the Drill Hall, and that the bulk of them are a success. Next year's program contains some items of more than usual interest, namely: 'Microscopic Gardening,' by Prof. Marshall Ward, of Cambridge; 'Artificial

Manures,' by Mr. J. J. Willis; 'Diseases of Orchids,' by Mr. G. Massee, F.L.S., of Kew; 'Physiology of Plants,' by Prof. S. H. Vines, of Cambridge; 'Mutual Accommodation between Plant Organs,' by Prof. G. Henslow; 'Roots,' by Prof. F. W. Oliver, and 'Sporting in Chrysanthemums,' by Prof. Henslow. In addition to these scientific lectures by eminent specialists, there will also be lectures upon practical subjects by leading practitioners. These lectures are all published afterwards in the Society's journal. The great exhibition at the Temple is announced for May 26th, 27th, 28th, and the exhibition of fruit at the Crystal Palace for Sept. 30th and Oct. 1st and 2d.

At the close of the thirtieth volume of *The American Naturalist* Prof. J. S. Kingsley, of Tufts College, and Prof. C. O. Whitman, of the University of Chicago, withdrew from the board of editors. Dr. F. C. Kenyon, of Philadelphia, takes the place of Prof. Kingsley as managing editor, with Prof. E. D. Cope. The *Naturalist* has, in its long history, witnessed unparalleled advances in the biological sciences, and will continue to be an important factor in the further progress that is assured.

Die Umschau is the title of a new weekly journal, devoted to pure and applied science, literature and art, published at Frankfort by Bechhold, and edited by Dr. J. H. Bechhold. The journal proposes to give a complete and reliable review in plain language of the advances in all the sciences. The first number includes articles by William Huggins on the physics of celestial bodies; by T. H. Achilles, Max Buchner and J. W. Bruinier on anthropological subjects, and by Prof. Eulenberg on the treatment of neurasthenia.

THE *Journal of Nervous and Mental Diseases*, New York, will hereafter be edited by a board consisting of Dr. Charles L. Dana, Dr. F. X. Dercum, Dr. Philip Coombs Knapp, Dr. Chas. K. Mills, Dr. Jas. J. Putnam, Dr. B. Sachs and Dr. M. Allen Starr, with Dr. Ph. Meierowitz and Dr. Wm. G. Spiller as associate editors and Dr. Charles Henry Brown as managing editor.

THE Macmillan Company announces as in preparation an *Encyclopædia of American Horticulture*, to be edited by Professor L. H. Bailey.

THE Agricultural Appropriation Bill was presented to the House of Representatives on January 13th, by Mr. Wadsworth, Chairman of the Committee on Agriculture. The total appropriation recommended is \$3,152,752, an increase of \$102,780 over the amount appropriated for the current year. The increase is chiefly for the Bureau of Animal Industry, to be used in the inspection of meat. \$120,000 is appropriated for the purchase and distribution of seeds, and the Secretary is directed to expend the appropriation. It is well known that Secretary Morton is opposed to this expenditure, and the item has been inserted in the bill without his sanction.

MR. CHAS. D. WALCOTT, Director of the U. S. Geological Survey, has asked for an immediate appropriation of \$25,000 for the preparation of a map of the gold and coal areas of Alaska.

THE Massachusetts Board of Agriculture has submitted to the General Court the report of the Gypsy Moth Commission. Mr. C. H. Fernald, the entomologist of the Board, recommends that \$200,000 be granted for the work, and holds that if this appropriation be given for five years, with a smaller appropriation for ten years more, the pest can be exterminated. It can be held in check for \$100,000 annually. If nothing is done the moth will spread rapidly in Massachusetts and elsewhere, and will cause great destruction.

BOTANISTS and zoologists will learn with interest that a Biological Survey of Alabama has been organized and put into operation. The survey will be carried on under the auspices of the Alabama Polytechnic Institute, and will be manned by the specialists engaged at that institution in the various lines of biological investigation. It will have for its object the study in field and laboratory of all plants and animals occurring in the State, and of the various conditions affecting them. The work will be done systematically and thoroughly and all results published. In a region so interesting and little known as this portion of the Southern United States, careful and extended research will be sure to yield results of great value.

Large quantities of material in all groups of plants, and animals (especially insects), will be collected and properly prepared. In connection with the survey there has been founded an Exchange Bureau, from which will be distributed all duplicate material. Those desiring to correspond relative to specimens, literature, or the work of the survey, should address: *Alabama Biological Survey, Auburn, Alabama.*

REUTER'S Agency is informed that Mr. Moore, of the Royal Society, has returned from Tanganyika. Mr. Moore was sent out by the Society early in 1895 to examine the fauna of Lakes Nyasa and Tanganyika. On account of the remarkable specimens of jelly-fish which have been sent home at different times by Mr. A. J. Swann and Captain Hore, the idea was formed that Lake Tanganyika must have once had some connection with the sea and still retained its partially marine fauna. Mr. Moore's researches completely confirm this view. The explorer is stated to have found not only remarkable marine jelly-fish and deep-sea fish, but also sponges in Lake Tanganyika. Mr. Moore will remain for about three weeks at Naples, in order to repack his collection before going on to London.

THE report of the Pasteur Institute for the quarter ending June 30th states that the total number of persons under treatment was 316, of which six died. Only twenty-three of the patients were foreigners.

A CHEMICAL laboratory has been fitted up in the top floor of the extension of the Boston State House, to be used by the State Board of Health for the analysis of water and other purposes.

THE London *Times* states that the Trustees of the British Museum have recently acquired, by purchase, a remarkable specimen, nearly 10ft. high, of the great extinct wingless bird, the moa (*Dinornis maximus*), from New Zealand. The intrinsic interest of this particular specimen rests on the ground that the skeleton is that of a single individual, unmixed with the bones of any other bird of the species. In this respect it is, indeed, extremely rare, not more than three, or at least four, similar examples being known. There are, of course, several

other specimens of *Dinornis maximus* to be seen in the British and other museums, but these have all been reconstructed from bones belonging to more than one individual. The skeleton now at South Kensington was discovered by Captain F. W. Hutton, F.R.S., Curator of the Canterbury Museum, New Zealand, who, in conducting some excavations at Invercargill, Southland, came across the largest and most varied collection of moa bones ever obtained from one place, representing probably not fewer than 800 birds, none of them belonging to still living species.

It is reported that motor carriages are to be introduced into New York in April by the New York Cab Company, compressed air being used to drive the carriages. The Hackney Vestry, London, is considering the use of motor vans and carts for watering the streets, collecting garbage, etc.

ELABORATE arrangements are being made for the International Horticultural Exhibition which will be held in Hamburg from May 1 to September 30, 1897. Besides a general permanent exhibition, outdoor and indoor, open throughout the summer, arrangements have been made for special exhibitions of plants, etc., at different seasons. The permanent exhibition will consist of various classes of trees, shrubs, herbaceous plants, groups of plants, technical appliances, garden plants, preserved fruits, wines and dried flowers and grasses. The dates of the special exhibitions are as follows: (1) Spring exhibition from May 1 to 7, 1897, for plants in season; (2) First special exhibition, May 30th to June 3d, for pelargoniums, floral arrangements, early vegetables; (3) Second special exhibition, July 2d to 6th, for gloxinias and other bulbous plants, roses (cut flowers), cut flowers or twigs of trees and shrubs, floral arrangements (to consist chiefly of roses); (4) Third special exhibition, July 30th to August 3d, for begonias, carnations, cut flowers (dahlias, gladioli and carnations), fruit trees in pots; (5) Autumn exhibition, August 27th to September 5th, for plants in season in pots (groups, single plants, novelties, etc.), floral arrangements, vegetables; (6) Fruit exhibition, September 17th to 30th.

MR. JOHN MILNE has recently advocated an earthquake survey of the world. He states that for \$5,000 twenty observatories willing to co-operate can be provided with the necessary instruments, and calls attention to the important theoretical and practical problems that can thus be solved. One of the recent earthquakes in Japan was recorded about 16 minutes after its occurrence in Mr. Milne's observatory on the Isle of Wight, and showed that there had been an error in telegraphic transmission to the newspapers of two days, whilst another gave an accurate account of a catastrophe the details of which were not known until mails arrived some three weeks later. An absence of records from the Isle of Wight seismographs has on more than one occasion shown that telegrams have exaggerated seismic effects, and in one instance at least—referring to a recently reported disaster in Kobe—indicated that the sender, regardless of the alarm he might create, was without foundation for his widely-published message. The immediate benefits derived by observatories at which instruments were installed, over and above the speedy announcement of great catastrophes in distant places, would be that the records of earth movements would throw light upon some of the otherwise unaccountable deflections shown in diagrams from magnetographs, barographs and other instruments sensible to slight displacements, whilst diurnal and other changes in level affecting astronomical observations would be continuously recorded.

MR. BENNETT, who is acting as British Consul-General at Galatz, has prepared, says the *London Times*, a report on the petroleum industry in Rumania, where, he thinks, it is likely to play an important part in future commercial development. Petroleum exists in abundance in Rumania, in the zone stretching from Turn-Severin, on the western frontier, along the foot of the Carpathians, towards Bukowina and Galicia. It is found throughout the whole of this region, but especially in the Olt, Dimbovitza, Prahova, Buzeu and Tazlan valleys. It is said also to be found in the whole of the plains down to the Danube. There are about fifty borings and eight hundred wells dug by hand in the five districts above mentioned; but these are all shallow, and

the output in 1894-95 reached 800,000 tons. Although petroleum has been worked in Rumania for 25 years, the industry is evidently in its infancy still. The greater part of the land is owned by the state and large holders who reside in the towns and will not invest money in industrial enterprise; grain has monopolized the energy and capital of the Rumanians, and the forests and mineral wealth of the country are neglected. Thus it was not until 1895 that a mining law was passed, and up to that date the ownership of land below the surface had never been determined. Nor is there a body of native mining engineers. About a third of the crude oil is taken from the wells of four firms, while the remainder comes from the workings of numerous small proprietors, who have not the capital necessary for proper development of the deposits.

UNIVERSITY AND EDUCATIONAL NEWS.

THE Johns Hopkins University has published the twenty-first annual report of President Gilman. The report itself, presented to the trustees on November 21st, extends to sixteen pages only, but there are two appendices. One of these contains the reports on the chief branches of study prepared by the principal instructors in the several departments, together with statements regarding the library, the press, the State Weather Service, The State Geological Survey and the marine laboratory. In conclusion there is given an interesting retrospect of the twenty years now completed by the University. The important service performed by the Johns Hopkins University for education and science in America is adequately witnessed by the fact that nearly half of its students have become teachers. The following institutions have on their staff more than ten students from the University: Johns Hopkins University (67), Chicago (23), Wisconsin (19), Bryn Mawr (18), Leland Stanford, Jr. (17), Michigan (17), Pennsylvania (16), Cornell (14), Columbia (13), Massachusetts Institute of Technology (11), Nebraska (11), Northwestern (11), Harvard (10), Woman's College of Baltimore (10).

THE faculty of the Massachusetts Institute of