hemp, from Yucatan; manilla hemp, from the Philippine Islands, etc.

Two classifications of fibers are presented, structural and economic.

The first is as follows:

A. FIBRO-VASCULAR STRUCTURE.
1. *Bast fibers* (of dicotyledons).
2. *Woody fibers* (of dicotyledons), from (*a*) twigs and small stems, used entire, (*b*) roots, (*c*) trunks split or cut into layers or splints, (*d*) trunks ground into pulp.
3. *Structural fibers* from (*a*) the isolated fibro-vascular bundles of the leaves and leaf stalks of monocotyledons, (*b*) the whole stems, roots or leaves of monocotyledons, (*c*) the fibrous portions of the leaves or fruits of certain dicotyledons.

B. SIMPLE CELLULAR STRUCTURE.
4. *Surface fibers*, including (*a*) hairs on seeds, (*b*) hairs from stem surfaces, and (*c*) epidermal strips from leaves, as of certain palms.
5. *Pseudo-fibers*, including (*a*) certain mosses, as species of sphagnum, (*b*) certain seaweeds used for packing, (*c*) certain seaweeds for cordage, (*d*) the mycelium of certain fungi.

Economically, fibers are classified as follows:

A. *Spinning fibers*, including (1) fabric fibers, (2) netting fibers, (3) cordage fibers.

B. *Tie material.*

C. *Natural textures*, including (1) tree basts with tough interlacing fibers, as in the 'lace barks,' (2) ribbon or layer basts, (3) interlacing structural fibers or sheaths, as cocoanut sheaths.

D. *Brush fibers*, including (1) prepared fibers from isolated fibro-vascular bundles, (2) fibers from roots, flower pedicels, etc., (3) twigs and splints.

E. *Plaiting and rough weaving fibers*, including those used for (1) making hats, sandals, etc., (2) matting, thatching, etc., (3) baskets, (4) chair-bottoms, etc.

F. *Various forms of filling*, as (1) stuffing for chairs, cushions, mattresses, etc., (2) caulking, (3) stiffening, *e. g.*, in the manufacture of 'staff,' (4) packing.

G. *Paper material*, for making (1) textile papers, (2) bast papers, (3) palm papers, (4) bamboo and grass papers, (5) wood-pulp papers.

CHARLES E. BESSEY.
THE UNIVERSITY OF NEBRASKA.

SCIENTIFIC NOTES AND NEWS.

REPORT OF THE SECRETARY OF AGRICULTURE.

THE Secretary of Agriculture has presented to the President his report reviewing the work of the Department for the past year. The conduct of the Department under Secretary Wilson has greatly advanced the economic and scientific study of agriculture and the conditions on which agriculture depends, and the recommendations of his report will consequently carry much weight.

Mr. Wilson proposes that agents for the Department should be stationed at each of the important American legations abroad for the collection of information of interest to American farmers. The Department is endeavoring to get information from foreign countries with which to compete in the markets of the world regarding crops and prices, and is also taking steps to ascertain what crops are grown on different thermal lines, so that seeds and plants may intelligently be brought to this country to assist in the diversification of our crops and add to their variety. There is a necessity for American agents, educated in agricultural science, in every foreign country to which are sent reports.

Mr. Wilson recommends an increase in the appropriations in aid of the Bureau of Animal Industry, of the Weather Bureau and of the publication offices. He thinks the Department should be enabled to place the results of important operations at agricultural colleges before the entire country, so that the farmers of each State may benefit from the work done in

other States. The present method of securing crop reports is criticised, and the employment of a statistical agent in each State with paid reporters is recommended.

Mr. Wilson not only believes that the exports from America can be greatly increased, but that nearly all the imported agricultural products, valued at $400,000,000, could be and should be produced at home.

THE GEOLOGICAL SURVEY OF WEST VIRGINIA.

At the last session of the Legislature of West Virginia an act was passed establishing a State Geological and Economic Survey, to be under the direction of a commission consisting of the Governor, State Treasurer, President of the State University, Director of the Agricultural Experiment Station, and President of the State Board of Agriculture. Three thousand dollars a year was appropriated to carry on the work. The act is similar to that establishing the Geological Survey of Maryland, in which the corporation of the Johns Hopkins University was secured and the Survey inaugurated in a manner so promising for science and economic usefulness.

The commission of the West Virginia Survey met in Wheeling last month and organized, electing Governor Geo. W. Atkinson President; Mr. M. A. Kendall (State Treasurer), Treasurer; Professor T. C. Atkeson (President of the State Board of Agriculture), Secretary; Mr. J. H. Stewart (Director of the Experiment Station), Superintendent of the Department of Economic Biology; and President Jerome H. Raymond (West Virginia University), Executive General Officer. Dr. I. C. White was elected Superintendent of the Survey. He is in Europe now, and it is not yet known whether he will accept, but he will return soon, and then the real work of the Survey will begin. Professor S. B. Brown, professor of geology in the University, was elected First Assistant Geologist and Curator of the Collections. Professor J. L. Johnston, professor of civil engineering, has been appointed Assistant Geologist, with the special duty of locating the meridian lines of each of the county seats of the State. The headquarters of the Survey are at the West Virginia University, Morgantown.

THE NEW YORK ZOOLOGICAL PARK.

A letter from Mr. William Hornaday, Director of the New York Zoological Park, published in the *Critic*, calls attention to a fact perhaps not known to those who have objected to increasing the attraction of the park lands north of the Harlem River by using a small part of them for botanical and zoological gardens. Mr. Hornaday writes:

"The Hon. W. W. Niles, who was a member of the Commission which (in 1884) selected the 4000 acres of farm lands in the Annexed District, now included in the four great parks, declares most positively that in determining the total area of land to be condemned and purchased by the city the Commissioners made the area as large as it is in order to provide abundant room for the large zoological and botanical gardens which they felt sure would soon be established by the city. In other words, it was the deliberate *expectation and intention* of the Commissioners that both of the institutions now complained of should find homes on some of the lands then acquired. The Commissioners very wisely did not attempt to assign sites for the zoological and botanical gardens. In choosing a home for the former, the Zoological Society naturally inferred that the site which would be the most accessible to the public, and also immeasurably the best for the animals, was the proper one to choose. There are 3,500 acres of public parks in the Annexed District, untouched by the two scientific gardens, or five and one-half square miles. Is not that enough? Of the 261 acres alloted to the Zoological Park, the collections will be located on the least attractive portion; fully one-half of the total area (*all* of the picturesque portion) has been set aside as pleasure grounds, only."

THE INTERNATIONAL LEPROSY CONFERENCE.

At the conclusion of the recent International Leprosy Conference at Berlin the secretaries drew up a summary of the results in English, German and French, intended especially for the governments who had sent delegates. The conclusions are as follows:

1. As might be expected, a considerable portion of the proceedings has been in connection with the bacillus of leprosy, which the Confer-

ence accepts as the virus of the disease, and which has been now known to the scientific world for upwards of twenty-five years through the important discovery of Hansen and the able investigations of Neisser.

2. The conditions under which the bacillus grows and develops are still unknown, as well as the way of its invasion into the human system; but from the discussions at the Conference it seems probable that a unanimity of opinion will soon prevail with regard to the modes of its dissemination throughout the body.

3. Very interesting observations have been brought forward concerning the large quantities of bacilli which are eliminated from the bodies of lepers through the skin and the buccal and nasal mucous membranes. It is desired that these observations be confirmed where opportunities occur. This question is important to those who are entrusted with the care of the public health, as we have to acknowledge that leprosy is a contagious disease.

4. Every leper is a danger to his surroundings, the risk varying with the nature and extent of his relations therewith and with the existing sanitary conditions. Although in the poorer classes the leper is especially a source of danger to his family and fellow workers, it cannot be denied that cases frequently occur also in the higher social circles.

5. The theory of the heredity of leprosy has lost ground in comparison with the now generally accepted opinion of its contagiousness.

6. The treatment of leprosy up to the present time has only had palliative results. Serum-therapy, so far, cannot be said to have been successful.

7. In view of the virtual incurability of leprosy and the serious and detrimental effects which its existence in a community causes, and considering the good results which have followed the adoption of legal measures of isolation in Norway, the Leprosy Conference, as a logical issue of the theory that the disease is contagious, has adopted the following resolution, proposed by Dr. Hansen and amended by Professor Besnier: (*a*) In countries where leprosy forms *foci* or has a great extension, isolation furnishes the best means of preventing the spread of the disease. (*b*) The system of obligatory notification, observation and isolation as carried out in Norway is recommended to all nations with local self-government and a sufficient number of physicians. (*c*) It must be left to the administrative authorities, after consultation with the medical authorities, to take such special measures as are applicable to the special social conditions of the districts.

GENERAL.

MR. HENRY S. PRITCHETT, Ph.D. (Munich), professor of physics and astronomy in Washington University, St. Louis, has been appointed by the President, Superintendent of the Coast and Geodetic Survey in the place of Gen. W. W. Duffield, resigned. Professor Pritchett was from 1878 to 1880 Assistant Astronomer at the Naval Observatory, Washington. He has engaged in work for the Survey in China and Japan as well as in the United States. We regret to notice the statement that Professor Pritchett is a Republican in politics, but hope that this is a mere accident and does not mean that the head of the Survey is liable to be changed every four years. There is every reason to believe that the Survey will now be conducted with the greatest efficiency and will contribute largely to the solution of the important practical and scientific problems with which it is charged.

IT is announced that the conference of delegates from the United States, Russia and Japan in regard to the seal fisheries has resulted in an agreement recommending the material limitation or complete suspension of pelagic sealing. Professor D'Arcy Thompson is now in Washington and it is expected that Mr. Macoun, the Canadian Minister of Marine, will shortly arrive, and that the conference between the United States, Great Britain and Canada will soon be held.

PROFESSOR F. F. MARTENS, professor of international law in the University of St. Petersburg, has been chosen an arbitrator in the question of the Venezuela boundary.

DR. H. HICKS, President of the Geological Society, London, has been awarded the jubilee medal established in commemoration of the sixtieth anniversary of the Queen's reign.

DR. EDMUND DRECHSEL, professor of physio-

logical and pathological chemistry and of pharmacology in the University of Berne, died on September 22d at Naples, where he was working at the zoological station on the chemistry of invertebrates. Drechsel was born at Leipzig in 1843 and was assistant to Kolbe, then professor of chemistry, and to Ludwig, then professor of physiology in that University. He was made associate professor at Leipzig in 1878 and was called to Berne in 1880. Physiological chemistry has recently suffered most serious losses in the deaths of Hoppe-Seyler, Baumann, Heidenhain and Drechsel.

Dr. Alexander Milton Ross died at Montreal on October 27th. He had made extensive collections of the fauna and flora of Canada and was the author of 'Birds of Canada' (1872); 'Butterflies and Moths of Canada' (1873); 'Flora of Canada' (1873); 'Forest Trees of Canada' (1874); 'Ferns and Wild Flowers of Canada' (1877); and 'Mammals, Reptiles and Fresh-water Fishes of Canada' (1878).

Sir Peter Le Page Renouf, the eminent Egyptologist, died in London about the middle of October at the age of seventy-four years. He was the keeper of the Egyptian and Assyrian antiquities of the British Museum from 1885 to 1891, and was the author of several important publications, including the Hibbert lectures on 'The Religion of Ancient Egypt' (1897), and an edition of the 'Papyrus of Ani.'

The following deaths are also announced: Dr. Leopold Auerbach, assistant professor of physiology in the University of Berlin; Dr. Mietschke, the German naturalist and entomologist; Dr. Hjalmar Heiberz, professor of pathological anatomy in the University of Christiania, and Dr. R. Branchat, professor of hygiene in the Medical Faculty of Granada.

It is said that the Norwegian government will not only allow Captain Sverdrup the use of the 'Fram,' but will give him $50,000 for an outfit. According to *Petermann's Mitteilungen* Captain Sverdrup had given up the intention of making investigations between Spitzbergen and Greenland, and it had been decided that he should proceed up Baffin Bay and Smith Sound to the part of the Arctic ocean north of Greenland, which is the region Lieutenant Peary had previously announced his intention to explore.

A cablegram from Christiania states that the government has instructed the Governor of the Province of Tromsöe, the most northern province of Norway, to charter a steamer at the expense of the state, to provision it for six months and to send out a relief expedition for Herr Andrée, the aëronaut, who ascended in his balloon, the 'Eagle,' on July 11th. The relief steamer will start in three days' time from Tromsöe, and will proceed to Spitzbergen.

The Imperial Russian Geographical Society will send at once an expedition, under the direction of M. Dmitrieff, to Abyssinia for anthropological research.

The Austrian steamship 'Pola,' Captain Paul von Pott, has again gone to the Red Sea for scientific explorations, and will this year cover the ground between Dschedda and Aden. Dr. Franz Steindachner, the eminent ichthyologist, has charge of the zoological work, and explorations will also be made in physical oceanography.

Professor Charles Burckhalter, of Chabot Observatory, Oakland, Cal, has left for Hong Kong, and will proceed to India with his instruments for the purpose of observing and photographing the approaching total solar eclipse of the sun.

Prince Peter Alexeievitch Krapotkin, the eminent Russian man of science, President of the Imperial Geographic Society, lectured in Washington on October 22d, before the National Geographic Society, on Russia and Siberia, dwelling at length on the geography of Siberia, which he compared with that of North America.

Professor Elliott has been nominated for the presidency of the London Mathematical Society.

The Astronomical Society of France held on October 6th its first meeting for the season. The President, M. Cornu, opened the session with an account of the astrophysical work of Fizeau. MM. Callandreau and Moye presented papers on the trajectories of comets and meteors.

The Agnew Memorial Pavilion of the Hospital

of the University of Pennsylvania was opened on October 15th. It has been erected at a cost of $150,000, and in addition to 120 beds, dispensary rooms, etc., contains three ampitheaters, one with a seating capacity of 270.

MR. WILLIAM C. TODD, of Atkinson, N. H., has given the Boston Public Library $50,000, the income of which is to be used for the purchasing of newspapers.

THERE has been held at Sydney, New South Wales, during the present summer, an electrical exhibition at which engineering machinery and scientific apparatus were well represented. A large number of exhibits were sent from America and Great Britain.

THE Zoological Park, Washington, has received three young buffaloes purchased from the Allard herd in Montana.

THE Kingsley Laboratory, the new scientific building of the Worcester Academy, was dedicated on October 30th. Addresses were made by President Eliot, of Harvard University; President Hall, of Clark University, and President Mendenhall, of the Worcester Polytechnic Institute. The building is said to be the best equipped for the study of the sciences possessed by any secondary school.

AT a meeting of the Council of the Australasian Association for the Advancement of Science on September 8th the honorary Secretary, Professor A. Liversidge, stated that he had received the titles of the following addresses: Section C—Geology and Mineralogy: Professor Hutton, F.R.S., of New Zealand, upon 'Early Life on the Earth.' Section F—Anthropology and Ethnology: A. W. Howitt, of Melbourne, 'On the Origin of the Aborigines of Tasmania and Australia.' Section I—Sanitary Science and Hygiene: The Hon. Allan Campbell, of Adelaide, 'Australian Sanitation, a Jubilee Retrospect.' Among other papers announced in addition to those we have already noticed are the following bearing upon the natural history of Australasia: For Section C—Geology and Mineralogy: 'Notes on the Physiography of the Parish of St. George, New South Wales,' by E. J. Statham; 'On Some Effects of the Dynamo-Metamorphism in the Omeo District, Victoria,' by A. W. Howitt; 'Metallurgical Methods in Use at Broken Hill,' by G. W. Blakemore; two papers by Mr. J. C. H. Mingaye, on 'Occurrence of Phosphatic Minerals at the Jenolan Caves, with Analyses,' and 'Notes and Analyses of some New Wales Phosphate Minerals.' For Section D—Biology: 'On the Physiology of the Brain of Marsupials,' by Dr. J. F. Cashman; 'Notes on the Fertilization of some North Australian Plants,' by Nicholas Holtze; 'A Few Words about the Flora of the Islands of Torres Straits and the Mainland about Somerset,' and 'Notes on Plants of the Rabbit-infested Country, Bulloo River, Southwest Queensland,' with Photographic Illustrations,' by J. F. Bailey. For Section E—Geography: 'The Earliest Discoveries in New Guinea and Polynesia,' by James MacClymont; 'Gramineæ of Western Australia,' 'Salsolaceæ of Western Australia,' and 'The Supposed Poisonous Plants of Western Australia, by F. Turner.

Two new museums will be opened at St. Petersburg in connection with the Army Medical Academy, one for psychiatry and one for neurology. The former will include objects illustrating the arrangements of asylums and the pathology of insanity, while the latter will illustrate the anatomy of the nervous system.

A PUBLICATION issued from the French Ministry of Finance gives some very elaborate statistics as to the quantity of wine, beer, cider, and alcohol consumed in the country. From the summary in the London *Times* we learn that the total quantity is 1,575,000,000 gallons, representing about $1\frac{4}{5}$ litres per diem for the whole population of France. Out of the total quantity consumed 967,000,000 gallons are wine, 395,000,000 gallons cider, 202,500,000 gallons beer, and 36,800,000 gallons alcohol. It is scarcely necessary to say that, while the greater quantity of the wine is consumed in the large towns, the cider is nearly all drunk in the country, especially in Normandy and Brittany, and the official statistics give a table showing what is the consumption of wine in the 47 towns with over 30,000 inhabitants. The figures, as might be expected, vary very much, the annual consumption being largest at Boulogne-sur-Seine (59 gallons), Nice (56 gallons) and St. Etienne (54 gallons), while Paris is only 13th.

on the list with 45 gallons. In none of the large towns in the South of France does the consumption fall below 30 gallons, but in seven large town in the North (Lille, Boulogne-sur-Mer, Dunkirk, Caen, Calais, Roubaix and Turcoing) it averages only six gallons. Another table gives the consumption of alcohol, and here Rouen, Cherbourg and Le Havre head the list with an annual total of nearly four gallons per head of the population, or more than double the quantity consumed in Paris.

UNIVERSITY AND EDUCATIONAL NEWS.

THE late George M. Pullman has left $1,200,000 for the erection and endowment of a manual training school in the town of Pullman.

THE Ohio Wesleyan University has received a bequest of $35,000 from the late Stephen Watson for the endowment of a professorship.

THE West Virginia University has followed the example of the University of Chicago, and will hereafter hold continuous session, the academic session being divided into four quarters of twelve weeks each with an intervening vacation of one week.

AN increase of forty-two students over last year is reported at Harvard College. The registration is as follows: Seniors, 337; juniors, 383; sophomores, 443; freshmen, 470; specials, 163; total, 1,796.

DR. CHARLES W. DABNEY, recently Assistant Secretary of Agriculture, and special agent in charge of scientific and statistical investigations, Washington, D. C., has been elected President of the University of Tennessee.

DR. ARTHUR ALLIN, of Ohio University, has been appointed professor of psychology and pedagogy in the University of Colorado.

DR. A. W. SHEEN has been appointed demonstrator in anatomy and Mr. S. C. Mahalanobis demonstrator of physiology in the medical department of University College of South Wales, Monmouthshire.

J. GRAHAM KERR, B.A., scholar of Christ's College, Cambridge, has been appointed demonstrator in animal morphology for a period of five years from October 1, 1897, in place of Mr. E. W. MacBride, who had resigned in order to accept the professorship of zoology in McGill University.

THE electors to the professorship of pathology, Cambridge University, will meet for the purpose of proceeding to the election of a professor on Saturday, November 6th. It is expected that Dr. Kanthack will be elected.

DR. HERMANN MUNK has been promoted to a full professorship of physiology at the University of Berlin. Dr. Hettner, of Leipzig, has been appointed assistant professor of geography in the University at Tübingen, and Dr. Max Busch assistant professor of analytical chemistry and chemical technology in the University at Erlangen.

THE annual report of President Schurman, of Cornell University, is the first of these important university publications to reach us. It opens with the minute adopted by the Board of Trustees on the death of their chairman, Mr. Henry W. Sage, who had made gifts to the University aggregating $1,175,000, and had given his services in many ways. The report reviews changes in the faculty, including some account of the work of Professors Dennis (analytical chemistry), Jacoby (civil engineering), Barr (mechanical engineering), and Trevor (chemistry), who were promoted to full professorships during the year. There were in the University 1,808 students, the number being practically the same as in 1893–4, before the requirements for admission were advanced. As Cornell is sometimes said to be developing into a great technological school rather than into a university it is interesting to note that in this period there has been a decrease of about 100 students in the departments of applied science and an increase of about 100 students in the academic departments. These numbered 593 students and there were 161 graduate students. President Schurman reviews the condition and work of the different departments and colleges of the University, the library, the grounds and the financial situation. The library now contains nearly 200,000 bound volumes; 10,000 have been added during the year. The financial statement is very brief. Except money paid from the Fayerweather estate, the University has received no bequests