

good, and demonstrated increasing interest in a neglected industry of national importance.

Among the implements, the increasing necessity for labour-saving contrivances is evidently continuing to produce continual improvements and new types. The set of milking machines attracted a great deal of attention, especially the Swedish Omega form, of vacuum type, which gained first place in trials held earlier in the year. The difficulty of cleansing milking machines has been one of their great drawbacks, but this is largely overcome in the Omega by employing short transparent celluloid tubes instead of long rubber tubes. Probably the most ingenious new appliance to be seen in the show was the "Erto" potato-planting machine. This, in one operation, digs trenches of the desired depth, plants the tubers at any distance apart, sows manure if required, and covers up the furrows. Novelties were not wanting among the exhibits of various well-known firms specialising in farm and garden plants. Suttons showed a new variety of sunflower with red centre, Marsters new varieties of wheat, and Gartons a new oat—the "Leader"—the first to yield five grains to a spikelet.

The most striking innovation on a large scale at the Bristol Show was the establishment of an Overseas Section, and it is to be hoped that this feature may be permanently retained. So many persons are emigrating overseas that it is important to give them every chance of seeing Colonial produce and studying Colonial methods. Readers of NATURE are mostly familiar with the kind of exhibits represented in this section, but large numbers of the populace last week were obviously keenly interested in the rubber series shown by the Federated Malay States, and the sugar samples from the West Indies and British Guiana, including food products for human and animal consumption, and even a sugar-cane plant in a living and healthy state. The time appears to have come when intending colonists should all have the opportunity of elementary instruction in Colonial or tropical agriculture before leaving the home country.

J. R. A.-D.

BEDFORD COLLEGE FOR WOMEN.

THE opening of the new buildings of the Bedford College for Women on July 4 by her Majesty Queen Mary was an important event in the history of university education.

A committee was formed in 1847 by Mrs. Reid and other ladies interested in women's education, lectures being given in Mrs. Reid's private house, and in 1849 the college was definitely started in a house of its own in Bedford Square, from which fact the college takes its name. In 1874 the college moved to Baker Street, and from that year its growth has been rapid. As time went on the accommodation at Baker Street was increased until every available square foot was covered; when it became evident that a move into larger and less noisy buildings was inevitable. For this purpose the council acquired the lease of South Villa, standing on land adjoining but outside Regent's Park. Three acres of the site were added to the park, about eight acres being left for the purpose of the college and its grounds. An appeal was issued for the necessary building fund, and a loyal response was given by old students and other friends of the college. Among other gifts may be mentioned a library and its furniture by Lady Tate, a dining-hall and common-rooms by Mrs. Oliver, a grant of 30,000*l.* from the London County Council, and an anonymous gift of 30,000*l.*

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The new college accommodates some 500 students, and (except for the library) was designed by Mr. Basil Champneys. It consists of four parallel rows of buildings: the library, a science block for chemistry, physiology, and physics, another science block for zoology, botany, and geology, and the hall and rooms for about eighty residents. These rows are connected at one end by corridors, by the Sir Julius Wernher reading-room, and by a block of buildings for administrative offices and for the rooms allotted to arts subjects and mathematics. This "arts" block also contains a large hall for public lectures.

In erecting these buildings the council has assumed a heavy responsibility, and in order to provide scholarships, to maintain the departments at a high level, and to keep up the fabric, an adequate endowment is urgently needed. An appeal has been issued for an endowment fund of 150,000*l.* A far humbler but very necessary appeal was also issued about a year ago for 2000*l.* to put the athletic clubs on a sound financial basis. The value of outdoor recreation to women coming from London homes, and engaged in severe mental work, can scarcely be over-estimated.

The Queen, who was accompanied by Princess Louise Duchess of Argyll and the Duke of Argyll, was received at the entrance of the college, and conducted by the Earl of Rosebery to the lecture-hall, where the council and staff were presented. She then proceeded to the two science blocks, where she inspected the students at work, and took the keenest interest in their experiments and exhibits. Afterwards she walked to the Tate Library, and then to the residents' block, where she visited some of the rooms. Meanwhile some 600 guests were awaiting her arrival in the dining-hall, the time being filled up by several speeches. The President of the Board of Education expressed strong appreciation of the work done by the college, and hopes of a great development of both school and university education in the future. In the absence of Sir John Simon, Miss Edgell (head of the department of philosophy) spoke next, and in an interesting speech outlined the progress of women's education during the last sixty years, and emphasised the great part played therein by the University of London. The Archdeacon of London pointed out the value of university education in the formation of national character. Then Lord Rosebery spoke until the Queen, having completed her tour of inspection, arrived in the hall, where she listened to a college song and received a bouquet from the students. She then said: "I have great pleasure in declaring the new buildings of this college open"; and left the college, after receiving thanks from Lord Haldane.

RUSSIAN GEOGRAPHICAL PAPERS.

Lake Balkhash.—Mr. B. F. Meffert, who visited this lake during a journey in Russian Asia in 1910, has given an account of its basin in the *Izvestiya* of the Imp. Russ. Geogr. Soc., Nos. i.-v., 1912. The basin is intimately connected with those of the lakes Sasyk-kul, Ala-kul, and Ebi-nor. The rocks are chiefly Palæozoic and eruptive rocks of various ages. Deposits dating no further back than the Tertiary are rare, and occur only in the eastern part of the basin. At some time or other before the Tertiary period the Palæozoic rocks were folded in various directions, chiefly north-west and west. When the faulting and upheavals which formed the horsts and troughs of the Tarbagatai, Dzungarian Alatau, the Chu-Ili watershed, &c., took place is not known, but

in some parts they may be referred to the Tertiary period, and also the subsidence, at least of the western part of the basin, is probably of the same age. Mr. A. M. Nikolski has connected Balkhash with the Han-hai, not with the Turkestan basin, believing that the Han-hai with Balkhash was isolated before the separation of the Aralo-Caspian sea from the Siberian, and certainly no Aralo-Caspian deposits occur for some distance west of Balkhash. Marks of high water are found on the north-west of the lake 100 ft. above the present level, and therefore the lake must at one time have covered a large area to the south and east. According to Golubief, the lakes Sasyk-kul, Uyali, and Ala-kul formed one lake within the memory of man, and the difference of level between Ala-kul and Ebi-nor is only 25 ft. During last century there was a long period of desiccation, but for the last twenty years the lake has been rising. The water of the western part of the lake, into which the Ili pours considerable volumes, is quite sweet, but it is brackish in the small bays and channels.

Floral Regions of Siberia.—In the Bulletin of the Imp. Academy of Sciences in St. Petersburg, No. 14, 1912, Mr. N. I. Kuznetsov proposes a division of Siberia into floral regions, after discussing those of Ledebour, Korzhinski, and Tanfilief. A line following the watershed between the Yenesei and Lena, approximately coinciding with geological and climatic boundaries, prolonged northwards to the watershed between the Khatanga and Anabara, and southwards to the mountains at the southern end of Lake Baikal, divides the principal regions into eastern and western parts. In the western section of the forest area arboreal species of the Altaic or western Mongolian centre prevail, in the eastern those of the Manchurian centre. Beyond the limit of arboreal vegetation determined by Siberian travellers, notably Middendorff, is the Arctic zone, its eastern part characterised by species and even families common to the Arctic regions and America, and also by representatives of the Alpine flora of the Stanovoi and Verkhoiansk ranges. Kamchatka and the Okhotsk coast down to the north of Sakhalin constitute a separate division, in which Altaic forms are absent, and peculiar species of trees, *Picea ajanensis*, *Abies nephrolepis*, and *Betula Ermanni*, occur. Foliage trees are seldom found in Siberia except in the Amur district, where Tertiary forms exist which perished in other parts of Siberia during the cold period contemporaneous with the Ice Age of Europe. The Alpine region is confined to islands and bare summits amidst the sea of coniferous forests, in the Verkhoiansk and other ranges. East of Lake Baikal *Pinus pumila* occurs, species which thrive on rocky peaks are few, and the flora passes at the north-eastern extremity of the Yablonovoi range into the Arctic flora. Lastly, there are two areas of steppe-lands, one in the west between the southern limit of the taiga, and the watershed between the Arctic ocean and the Aralo-Caspian depression, the other embracing the basins of the Shilka, Argun, and the Upper Amur, as far as Albazin.

Natives of Siberia.—According to Mr. S. Patkanof (*Zapiski of the Imp. Russ. Geogr. Soc., Statistical Section*, vol. xi., No. 1), the natives of Siberia number 870,536, of whom 442,459 are males. This sex generally preponderates, except in a few small tribes. The most numerous are the Buriats, who number 288,599. As regards governments, Yakutsk contains the largest number of natives, namely 235,623, and they constitute 87.5 per cent. of the total population. In Transbaikalia and Irkutsk they are also numerous, while they are few in the Amur province. There are, however, districts of Siberia where the natives are almost

all the population. The other inhabitants of Siberia, chiefly Russians, number 4,889,633, so that the natives constitute only about 15 per cent. of the total population.

METEOROLOGICAL REPORTS AND SUMMARIES.

A USEFUL discussion of the cloudiness and sunshine of North America, by Mr. A. Gläser, is contained in *Aus dem Archiv der Deutschen Seewarte*, vol. xxxv., No. 1, based on published data from available sources. The subject is treated in considerable detail as regards time and place, and is illustrated by copious tables and diagrams. The few following points may be mentioned among the general features referred to. In the westward districts westerly winds bring most cloud, clear sky in summer being due to the higher saturation point of the air. Eastward of the Rocky Mountains the sky is clearer, but with northerly and southerly winds the spring is the most cloudy season. The winter barometrical minimum in the North Atlantic causes easterly winds in the eastern States, and these, mixing with the relatively warm air of the coast, produce a large amount of cloud. The high pressure in the south-east in autumn causes clear weather; in the south the greatest clearness occurs towards the end of winter. In the south-west of the United States and western Mexico the warm winds of the Gulf of California cause much cloud in summer; the clearest season is spring, and the dry northerly winds of the northern portions bring clear weather in autumn. The most bright sunshine is found in the south-west of the continent, and the least in the north-west and north-east, where the sun's power is naturally much weaker. In the region east of the Rocky Mountains there is comparatively little change in proceeding from south to north.

The Rev. L. Froc, S.J. (director of the Zi-ka-wei Observatory, near Shanghai), has issued the first part of a useful discussion of the rainfall in China during eleven years, 1900-10; the paper also includes data for a number of stations for shorter periods. Full particulars are given respecting the geographical position and surroundings of each station. In addition to the sums for individual months and years, and means for seasons and for the whole period, interesting details are given with reference to the variability of rainfall and unusual falls in the yearly, monthly, and daily periods, but the general discussion of the data and preparation of a rainfall map are reserved for the second part of the paper, to be published later on. It is remarked that the rainfall is not so excessive as in some neighbouring countries, e.g. the Philippine Archipelago. The following are among the heaviest of the yearly falls:—Hongkong, 2473 mm., in 1902; Fouchow, 2572 mm., in 1906; Sanchoei, 2760 mm., in 1907; Pakhoi, 2691 mm., in 1908; all in the south-east of China. The greatest daily fall was 320 mm. (12.6 in.) at Pakhoi. The diagrams show that in all districts the greatest rainfall occurs during the summer half-year.

The Commonwealth Central Weather Bureau has issued an average rainfall map of Tasmania, the fifth of the series showing the annual rainfall distribution of Australia. The most striking feature of the map is the great variation between the greatest and least average falls, viz. 17.9 in. at Beaufront, in the midland district, and 115.8 in. at Mt. Lyell, on the west coast. This coast is exposed to the moist westerly winds, and condensation is favoured by physiographic conditions, the result being a mean annual fall of 88.7 in. for the whole district generally. On the east coast the annual