Our Astronomical Column.

THE DATE OF EASTER.—It seems a curious anachronism that our calendar in the twentieth century should still be largely influenced by the lunar chronology which passed out of direct use nearly two thousand years ago. That was the most obvious system to employ at the dawn of astronomy, the moon's rapid motion and the ease of locating its position in the heavens making it far superior to the sun as a time-measurer. But as time went on the inconvenience of having a variable number of months in the year, and of having events like the equinoxes and solstices occurring on variable dates, caused the system to be abandoned and a purely solar calendar substituted.

The Passover was, of course, on a fixed date of the lunar calendar, the fourteenth day of the first month, and, owing to the close association of this feast with the events commemorated at Easter, an attempt has been made to follow the ancient system of fixing its date. That this is mainly the result of sentiment is shown by the fact that Christmas and other feasts are kept on fixed days of the solar year; moreover, the coincidence with the ancient method is not perfect, since Easter is tied to one day of the week, which was not the case with the Passover. This fact alone may produce a deviation of six days, so that it is obvious that no serious principle could be involved in increasing the deviation to a fortnight or thereabouts, which is all that a fixed date demands. Many unofficial ecclesiastical pronouncements have shown that there is no strong hostility to such a change. Lord Desborough brought the matter forward in a letter to the *Times* on July 20, and in the House of Lords on the following day, pointing out the inconvenience felt by the schools, universities, law terms, etc., through the variable date. The Earl of Onslow did not give much hope of Government action, but this is clearly a matter for international, not merely national, arrangement. The Astronomical Union in its session at Brussels last July appointed a Committee on Calendar Reform, with Cardinal Mercier as chairman, and it is understood that the date of Easter was one of the subjects of reference. The present time, when so much is in the melting-pot, would seem to be a particularly hopeful one for promoting this and similar reforms.

ASTRONOMY IN TOWN PLANNING.—It is a sign of awakening public interest in astronomy that a paper should be read before the Ottawa centre of the R.A.S. of Canada on the importance of considering practical questions of incidence of sunlight in planning out new towns. The author, Mr. H. L. Seymour, refers to the action of sunlight on bacteria and to the importance of letting all rooms get their share of sunlight, which is best secured by making the corners of the houses point to the four cardinal points, which means that the streets should run from N.E. to S.W. and from N.W. to S.E. He quotes Mr. Horace Bushnell as having put forward the same idea in 1864; but, nevertheless, the tendency has been rather to make the streets run N.-S. and E.-W., with the result that northward walls get no sunshine at all for more than half the year. In the planning of garden cities, where the houses are not contiguous, it is also important to place them so that the shadow of one house may not fall on another, or at least to minimise such incidence. The heights of buildings should also be so regulated that those opposite them are not in perpetual shadow.

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The Empire Timber Exhibition.

By ALEXANDER L. HOWARD.

THE Overseas Trade Department of the Board of Trade some time ago conceived the idea of organising an exhibition which should be a representative collection of those timbers which form the forest wealth of the countries which constitute the British Empire. This excellent scheme, possibly the direct outcome of the experiences of the war, was cordially and unanimously supported by the representatives of the Governments overseas.

Among the many lessons learned as a result of the war none was of greater importance than the knowledge that was brought home to us of our great dependence upon the products of the forest for the making and building up of every possible kind of offensive and defensive engine of warfare as well as for the maintenance of the daily requirements of ordinary life. From the time when the proposals of the Board of Trade were first considered every effort was made by the representatives of the different States of the Empire and by the officials at home to see that not a stone was left unturned to show conclusively what it was possible to achieve in the matter of timber production from every source. By a happy chance the date for the exhibition was fixed to coincide with that of the British Empire Forestry Conference, which brought together representatives of the Forest Services throughout the Empire, and there can be no doubt that such an exhibition must form the best possible opportunity for the forest man to gauge the value of the work upon which he is engaged.

The countries of the world may be classed into three grades: one which possesses a competent scientific forest service with practical work in full operation; a second which also possesses such a forest system, but lacks the practical application of theory; and a third which possesses neither scientific nor practical forestry. It is regrettable that until a very recent date the United Kingdom must have been classed in the last category, and, although much has been done in the past few years to remedy the situation, it is doubtful whether the great national importance of the subject has yet been fully realised.

The Empire Timber Exhibition entailed an enormous amount of continuous hard work and persistent energy which eventually resulted in bringing together a collection of many hundreds of timbers from every part of the Empire, and certainly the majority of those of any commercial importance. A collection of this kind is not easy to gather together, and it is doubtful whether such an opportunity is likely to be again available for a very long time.

The following are a few of the more noteworthy of the exhibits of the various countries:

British East Africa.—The considerable forest resources of this country are practically unknown and their exploitation is yet in its infancy. The most important timber is pencil cedar (*Juniperus procera*), which is slightly harder and more brittle than the American variety (*J. virginiana*). So far it has not been much appreciated by British manufacturers, although its importance may be gauged from the fact that in 1910 31,000 logs of this timber were imported into Germany from what was then German East Africa. As the majority of the lead pencils used in this country before the war were of German manufacture, the importance of this supply is obvious.

The Gold Coast.—Supplies of the timbers of the Gold Coast have already been seen in this country, but this exhibit showed many which are unknown here, though, as with other countries, much confusion

arises from the varying vernacular names. The various species of Khaya, the African mahoganies, play the most important part, for this wood, which is generally of fine texture and good quality, has been in very large demand, and extraordinary prices have been realised for it. Another valuable wood is that labelled Odum (*Chlorophora excelsa*), which has also been imported as Iroko, sometimes falsely termed African teak. While it is in itself of great value, and likely to be more so in the future, it possesses none of the qualities of teak with the exception of a superficial resemblance in colour. The wood labelled Kaku, also called Karkoo (*Lophira procera*), is generally known in England as African oak; it possesses unique qualities of strength and durability, and it is to be regretted that supplies seem to be scarce.

Nigeria.—From Nigeria also *Lophira procera* is available, though here it is known as Eki; it is a strong wood, and is reported as being both termite- and teredo-proof. Other heavy constructional woods which resist the white ant and show good promise for the future are Sasswood (*Erythrophloeum guineense*), the gamboge-coloured Opepe (*Sarcocephalus esculentus*), Agboin (*Piptadenia africana*), and Apa (*Azelia africana*). A particularly fine ebony of large size and beautifully variegated colour is that known as Kawraw (*Diospyros mespiliformis*). First and foremost amongst the woods from this region, however, are the mahoganies, which form the bulk of the supplies. This exhibit was in charge of Mr. Lauchlan.

Western Australia.—The depletion of the forests in the past has reduced the volume of the timber available, but their re-afforestation is now in the charge of Mr. C. E. Lane-Poole, and supplies will probably be assured for the future. One of the chief factors in the great value of the timbers of Western Australia is their durability. Jarrah (*Eucalyptus diversicolor*) and karri (*E. marginata*) sleepers, for instance, $4\frac{1}{2}$ in. by $9\frac{1}{2}$ in., on the Great Western Railway remained sound in the ground for twenty years, and appear to be good for another twenty years, while the trenail has remained in position during the whole period. It should be remembered also that a jarrah or karri sleeper $4\frac{1}{2}$ in. by $9\frac{1}{2}$ in. is better than one 5 in. by 10 in. of any other wood. Jarrah is also shown in the form of flooring, and provides a smooth, hard-wearing surface equal to that of any other hardwood. Telegraph arms in karri were exhibited; these have been extensively used and much appreciated by the G.P.O. for many years. These hardwoods take premier place for such work as piling, wharf-planking, and bridge-building, and, though more costly in their initial outlay than many timbers, prove the most economical ultimately. As a furniture wood jarrah is also excellent; the chairs, tables, and panelling which were exhibited illustrate its value for this purpose.

Canada.—At the Canadian exhibit, which was in charge of Mr. Stokes, were shown two interesting models of wooden houses made of Douglas fir (*Pseudotsuga Douglasii*). Some sixty-nine timbers were shown, of which about twenty-five are of commercial interest, the remainder forming a valuable reserve for future use. Two of the outstanding timbers are the Sitka or silver spruce (*Picea sitchensis*), which might be called the aluminium of timbers, and veneer of basswood (*Tilia americana*), which is used in the making of safety matches. The by-products of the Canadian forests include turpentine, artificial silk and surgical cotton made from sulphide pulp, and the ground-wood pulp which is used in the manufacture of the paper on which the *Daily Mail* is printed.

British Guiana.—The timbers produced from this country, the exhibit of which was in charge of Mr. Herbert Stone, are of very great importance, and

provide a source of supply which has never yet been properly realised. With the exception of greenheart (*Nectandra Rodioet*), no import into the United Kingdom worth mentioning has occurred. This fact is evidence of the lack of enterprise which this country displays, because from Dutch Guiana (Surinam) similar woods have been known and appreciated for many years in Holland, France, and Germany. Among the practically unknown timbers which should be in demand are purpleheart (*Copaifera pubiflora*), the rich and brilliant colour of which stands out remarkably even amongst the many brilliantly coloured woods of South America; mora (*Dimorphandra Mora*), a wonderfully durable wood suitable for constructional work and for sleepers; wana (*Nectandra Wana*); brownheart (*Andira inermis*) (this wood, which is called Surinam teak by the Dutch, was named partridge wood by Laslett); locust (*Hymenoclea courbaril*); and crabwood (*Carapa guianensis*). All these are fine durable woods suitable for construction in buildings which are required to last for generations.

Indian Empire.—The remarkable exhibit of the timbers of the Indian Empire, both in the raw state and manufactured into furniture and so forth, was the more noteworthy when it is remembered that practically none of these timbers of India had ever before been seen in this country. Even those who were acquainted with the forest wealth of India have not hitherto realised the extent of its commercial value in Europe. Amongst the exhibits were two halls and staircases made respectively in Indian silver greywood and padauk (*Pterocarpus dalbergioides*), a dining-room panelled in gurjun (*Dipterocarpus turbinatus*) and furnished in laurel wood, a drawing-room in sissoo (*Dalbergia Sissoo*), a bedroom in Indian black walnut with panels of walnut burr (*Juglans regia*), and a billiard-room furnished entirely in padauk and panelled in laurel wood. The great possibilities of the Indian timbers were, perhaps, most strikingly shown in the railway coach built by the Great Eastern Railway Co. The constructional portion was entirely of Indian wood, the decoration of the first-class carriage being in Indian silver greywood and that of the third-class in padauk. These presented such an excellent appearance that their increasing use in this direction is certain.

In addition to these larger exhibits were shown chairs, mirrors, and numerous small articles which serve to illustrate the many and varied uses to which the woods may be put. No trouble has been spared to demonstrate the fact that for every purpose for which wood is required the products of the Indian forests can meet the demand. Some two hundred small specimens showed the wide range of colour and texture which is available. Among this large collection of timbers the following are particularly worthy of the most careful attention of those interested in timbers for decorative and constructional work. Gurjun (*Dipterocarpus turbinatus*), a pale brown-coloured wood with a delicate aromatic scent, is an attractive medium for panelling, and one of the best hardwoods for flooring which it is possible to obtain. It is available in large sizes of superlative quality, and at a price which brings it within the range of even the most economical kinds of uses. Padauk is a wood which is unique in its brilliant red to maroon colour. It is exceedingly firm and durable, stands well without shrinking or warping, and is one of the strongest woods it is possible to obtain. During the war immense quantities of padauk were used for saddle-trees and gun-carriages, for which purposes it is difficult to find its equal. It was also used for the felloes of some exceptionally large wheels for heavy guns for use in Russia. The produce of a

species of *Canarium*, which has been termed Indian white mahogany, is likely to take an important place in the future. It is a smooth, even-grained wood which will be available at a very reasonable price. Haldu (*Adina cordifolia*) is a bright canary-coloured wood notable for the smooth and even regularity of the grain. It is possible to carve it in any direction without splitting—a striking quality which gives it a particular value. Perhaps the finest carving wood which it is possible to obtain, however, is Indian red pear (*Bursera serrata*), which possesses the above qualities in a unique degree. Other woods which are chiefly notable for their decorative qualities are Indian red zebra-wood (*Melanorrhoea usitata*), Indian primavera, yellowheart (*Fagraea fragrans*), and the handsome striped and mottled ebony known as Andaman marblewood (*Diospyros Kurzii*). It becomes abundantly clear that the only thing necessary for these timbers of India to take the important position which their merits deserve is that the representatives of the Government in India should continue to provide regular and certain supplies, and to this end extensive arrangements are now being made.

The United Kingdom.—About seventy varieties of timbers grown in the United Kingdom were shown, and these included such importations as the silver wattle of Australia and the black walnut (*Juglans nigra*) of America. Floorings in yew (*Taxus baccata*), cherry (*Prunus Avium*), and beech (*Fagus sylvatica*), amongst others, illustrated a little-known use for these woods. The decorative effect of English brown oak (*Quercus Robur*) was shown in various articles. Other exhibits, such as the gondola of an aeroplane made in English ash (*Fraxinus excelsior*), called to mind the large part played in the war by the native timbers.

Other countries showing interesting exhibits, of which space forbids mention, were British Honduras, Ceylon, Fiji, Newfoundland, New South Wales, New Zealand, Union of South Africa, Tasmania, and Trinidad.

The Education Act, 1918.

LONDON COUNTY COUNCIL DRAFT SCHEME.

THE Education Act of 1918, which among its provisions requires that draft schemes for giving effect to them shall be submitted by the local education authorities, has resulted in a remarkably interesting document just issued by the Education Committee of the London County Council, in which is set forth not only a scheme for the administration of the Act within the county, but also a most informing summary of the history of education in London during the nineteenth century and of the various legislative enactments passed from time to time, notably those of 1870 and 1902, to increase the facilities and improve the quality of education especially for the large population immediately within its area, now amounting to upwards of $4\frac{1}{2}$ millions. The report further makes clear the present activities of the Committee with its 951 separate elementary schools, in which 695,197 pupils are enrolled, with an average attendance of 590,633, from which figures it would appear that more than 100,000 children are constantly absent. The schools are staffed by 20,000 teachers (less than one-third are men), of whom only 300 are uncertificated. In addition to the ordinary elementary schools there was organised in 1910 a system of central schools to the number of 51, distributed more or less evenly throughout the County of London, and filled with pupils selected partly by means of junior county scholarships at about eleven years of age with a view to an advanced course of training of four years.

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The Council, as the local education authority, is concerned not only with the mental well-being of the child, but also with its physical and social welfare. Having regard to the fact stated by Sir George Newman in a recent report, that there were more than one million children in attendance at public elementary schools in England and Wales who were unable by reason of physical or mental defects to take effective advantage of the instruction offered, no feature of the past and future work of the Council can be regarded as of greater importance than the effort to raise and maintain the standard of bodily health and intellectual vigour of the children of London. The statutory medical inspection in the schools is carried out by 57 assistant medical officers and a staff of 208 nurses under the Medical Officer of Health of the county. The county is divided into five areas, each under a divisional medical officer, a superintendent of nurses, a treatment organiser, and a children's work director. During 1919 169,200 cases of various kinds were treated, and for 1920-21 provision is to be made for 40,000 cases more. A fee of 1s. is required in each case where the parents can afford it, otherwise the treatment is free.

There is special provision for anæmic and sub-normal children, for those with speech defect, of whom there are about 1200 in the schools who need treatment, and for blind and deaf children, of whom there are 317 and 693 of the elementary-school class respectively, whilst there are also 659 partly blind and 117 partly deaf London children.

All these measures denote a seriously important and beneficial advance upon the almost entire neglect of child-life in the nineteenth century. The provision of higher education within the county includes 23 schools provided and maintained by the authority and attended by 8702 pupils, 31 schools with 11,808 pupils aided by the authority, 47 other public secondary schools with 16,462 pupils, 40 schools conducted by religious bodies with 5170 pupils, and, lastly, 421 private schools with 27,295 pupils. The last two groups are regarded as preparatory rather than as secondary. There is thus a total of 562 schools in the county area with 68,807 pupils under instruction, much of which, it is not unreasonable to say in respect of the great majority of the private schools, can scarcely be efficient either in subject or in quality. The Council maintains five training colleges for teachers, one of which is a school of the University of London, and makes maintenance grants to three recognised training colleges within its area for domestic-economy teachers.

The provision of technical education within the county since the passing of the Technical Instruction Acts of 1889 and 1891 comes under review, and is marked by three periods of development. The first covers the years 1889-1904, and embraces the work of the Technical Education Board established in 1893; the second from 1904 to 1909, which followed the traditions and policy of the Board; and the third from 1909 to the present time, which has aimed at a progressive delimitation of the functions of rival institutions and at a general endeavour to co-ordinate all forms of education.

In 1892 a general survey was made of the needs of London as a preliminary to the operations of the Technical Education Board, and, as a result, the Board made direct grants in aid of polytechnics and other institutions for their maintenance and equipment and for the extension of their work. There were 26 technical institutions so aided in 1903, some of which were under the direct control of the Council, and grants were also made to the extent of 33,000l. in aid of science and language teaching in the secondary schools. A system of scholarships was