

*THE FORTHCOMING BELFAST MEETING OF
THE BRITISH ASSOCIATION.*

PREPARATIONS for the forthcoming meeting at Belfast are already well advanced, and careful attention is being paid by the various committees to those details which make so much towards a satisfying and successful issue.

The last meeting in Belfast was under the presidency of Prof. John Tyndall, whose famous address on that occasion will be remembered. It is interesting to note that at this year's meeting the president-elect, Prof. Dewar, F.R.S., who has so widely extended the bounds of our knowledge of the properties of liquefied gases, comes to preside over this meeting of the Association in the place where the late Dr. Andrews made his classical researches on the same subject, and where a collection of his apparatus is preserved in the laboratory where he worked.

The meeting will have ample accommodation in Queen's College and neighbouring buildings, all within a radius of three minutes' walk from the reception-room, which, as on the last occasion, will be the large examination hall of the College. Most of the sections will, as before, find place in the lecture-rooms close at hand, those sections dealing with allied subjects being close to each other, an arrangement made more easy by the recent additions to the College buildings. These include chemical laboratories, physiological and pathological departments and a students' union.

The first general meeting will be held on Wednesday evening, September 10, in the Grosvenor Hall, which seats about 2500 persons, when the president-elect will deliver his inaugural address.

The Friday evening discourse will be given by Prof. J. J. Thomson, F.R.S., on "Becquerel Rays and Radioactivity," one of the most fascinating fields of advance in modern physics and a subject which affords scope for a wide range of experimental illustration. On Monday evening a discourse will be given by Prof. W. F. R. Weldon, F.R.S., on "Inheritance." The Saturday evening lecture will be delivered by Prof. Louis C. Miall, F.R.S., and the subject will be "Gnats and Mosquitoes," about which so much interest has recently centred in connection with the propagation of malarial fever. Conversations will be given on the Thursday and Tuesday evenings.

It is intended to organise a loan collection illustrative of Irish antiquities and archæology and also of the progress of Belfast and its industries since remote times, and supplementing the interesting collections of a similar kind already existing in the local museums.

It has been thought best to arrange for excursions on Saturday, September 13, to the most important and interesting localities only, and to provide for large numbers in each party rather than to have many excursions, the want of interest in the less important of which might cause disappointment. Efforts will be made to facilitate the attendance of the more distinguished members on these occasions.

The chief excursions will be to: (1) Portrush and Giant's Causeway. (2) Glenariff, Garron Head and Coast Road. (3) Newcastle, Tollymore Park and Mourne Mountains. (4) Warrenpoint and Carlingford. (5) Drogheda and the Valley of the Boyne. Specially prepared pamphlets will be issued as guides to the excursions. A number of minor excursions will be so arranged as to suit the spare time that may be at the disposal of members. In connection with the meeting and the excursions, the following notes upon Belfast and the neighbourhood are of interest.

For the paragraphs dealing with geology and botany I am indebted to Mr. S. A. Stewart, for that on zoology to Mr. Robert Patterson, and for that on archæology to

Mr. F. J. Bigger. Further information on these or other allied subjects will be most willingly given to members by the hon. secretaries of either the Belfast Natural History and Philosophical Society, Belfast Museum, College Square, or the Belfast Naturalists' Field Club at the same address.

Geology.—The geological characters of the counties of Antrim and Down differ very widely. The river Lagan, which separates them, is also the dividing line between the Palæozoic rocks of the south-east and the interesting secondary series to the north. The city of Belfast is built mainly on drift deposits which overlie Triassic marls and sandstones. The hills which almost encircle the city are made up of eruptive masses of dolerite covering sedimentary deposits, which consist of hard Chalk, Upper Greensand, Lias Clays, Keuper Marls and Bunter Sandstones, the interior of the county being a more or less elevated plateau. These great masses of Trap, more than 1000 feet thick, have been erupted in successive sheets, and contain beds of iron ore at certain levels. At Ballypallidy many fossil plant remains are found which determine the age of these erupted rocks as Eocene. The beautiful prismatic rocks of the Giant's Causeway are well known, and this columnar Trap is seen in several places on the coast, though in minor masses and less developed form. Good sections of the sedimentary rocks may be seen in the Belfast hills, the Antrim coast road, Portrush, and elsewhere. A much indurated but fossiliferous bed of Lias clay, so hard as to appear flinty, occurs at Portrush. In the Cushendall district some older rocks are interpolated. At Cushendun, between Cushendall and Ballycastle, is a massive conglomerate which has been supposed to be of the age of the Old Red Sandstone; where it crops out on the shore some fine caverns have been excavated by the action of the sea. Carboniferous shales and sandstones occur near Ballycastle, and coal mining in these beds is of very ancient date.

To the south and east of Belfast lies the county of Down, with its range of mountains stretching from Newcastle to near Warrenpoint. There is little variety in the rocks of the county. The higher mountain peaks are of granite, while the stratified rocks of less elevation are very much hardened Lower Silurian grits and shales. The granite masses of the Mourne Mountains are valuable building material, and they yield beryl, topaz and other much-prized minerals. Save the Silurian, there are scarcely any stratified rocks in the county. A very small patch of Permian occurs below high-water mark at Cultra, Belfast Bay, and with it a strip of Carboniferous Shale. At Newtownards is Scrabo Hill, which is an outlier of the New Red Sandstone; and at Castle Espie, on Strangford Lough, is a very small exposure of Carboniferous Limestone. Carlingford is in the county of Louth; it is a Carboniferous Limestone country, as indeed is the greater part of that county. At Coalpit Bay, near Donaghadee, are Silurian shales with graptolites.

Zoology.—The zoology of the district is exceedingly interesting, and specialists in any branch might well devote additional time to it beyond the official week. To the conchologist the district is a happy hunting-ground, fully two-thirds of the species of British land and freshwater mollusca being found here, some of extreme rarity, while several species that are very rare in England are found here in some numbers. The marine mollusca will also repay investigation, this being the only British locality for several species, while the richness of this fauna is shown by the fact that recently a single day's dredging produced one species new to science and two more new to Britain. The coleopterist will also find an interesting fauna awaiting him, several species being found here which are unknown elsewhere in Britain. September is rather late for the lepidopterist, otherwise some good things might be found. But,

indeed, remarks such as the above might be made of almost all the various branches of zoology; the district is well worth thorough searching; the Mourne Mountains have been scarcely touched by the collector, and important finds might be made at any time. The field naturalist could easily spend a profitable week on or around Lough Neagh—by far the largest lake in the British Islands—which is comparatively close to Belfast and easy of access. Here the pollan is found in great numbers, and those interested in fish can investigate this species, which is not found in either England or Scotland. The Toome Eel Fishery is also worth a visit, ten thousand pounds' worth of eels being caught annually.

Botany.—Though the peculiar group of plants, styled in the *Cybele Hibernica* "Cantabrian," which enrich the flora of south-west Ireland are absent in the north-east, yet the floras of Antrim and Down are both extensive and varied. The recent "Irish Topographical Botany," by Praeger, gives the plants of co. Antrim as 777, in an area of 1191 square miles; co. Down, 742 species, area 957 square miles. The coast-line of these two counties, more than 200 miles, with its sand dunes, mud flats and maritime rocks, affords suitable sites for very diverse groups of plants. The visitor to Newcastle in co. Down will find on its sandy warrens quite a number of uncommon species, while the muddy shores at Dundrum yield such plants as *Atriplex portulacoides* and *Juncus obtusiflorus*. This sea-coast is girt in almost its entire extent with hills and mountains of considerable elevation and varied mineral composition. The visitor to the Mourne Mountains will meet with siliceous rocks, granites and indurated Silurian grits and shales, yielding at Tollymore and elsewhere hawkweeds, some of much rarity. The Trappean hills which characterise almost exclusively the greater part of co. Antrim give a flora differing considerably from that of its neighbouring county. Glenariff is typical of the rugged and picturesque ravines cut deep, by the waters flowing from the moors above, into the basalt and secondary rocks of Antrim. The yew tree, formerly plentiful, still lingers on the wild cliffs of Glenariff, but apparently is near extinction. The rare umbellifer *Carum verticillatum* is plentiful on the Giant's Causeway headlands, and Scottish lovage is found on rocks washed by the sea near Portrush. The bryologist will find in "the glens of Antrim" capital hunting grounds, as their moss flora includes many species of considerable rarity. The south of the county has during last year yielded to the researches of Mr. J. H. Davies *Ditrichum vaginans*, a moss new to the British Isles. The valley of the Boyne in co. Louth, to the south, is in a limestone district, and has an extensive flora consisting of species that usually frequent calcareous tracts, but has no special features to note.

Archaeology.—The antiquities around Belfast are numerous and representative, more especially the prehistoric remains. Forts and souterrains are abundant and cromleacs numerous, the finest being the Giant's Ring quite close to the city. Here a fine cromleac is surrounded by a great earthen ring, a wonderful evidence of man's power and labour in the earliest ages. Several fine souterrains, chambered and complicated, are to be found near Antrim town. Standing stones, some holed, are also numerous, whilst Ogam monoliths occur at Connor. Celtic pre-Norman churches can be seen in several parishes with holy wells adjoining, whilst later churches with distinctive features, several round towers, such as those at Antrim, Armoyn and Drumbo, can easily be visited. Of the abbeys, the most attractive are Grey Abbey, a Cistercian house, Inch Abbey, and Bun-na-Margie, a Franciscan foundation. Some ancient crosses and cross slabs, such as those at Downpatrick, Donaghmore, Dromore, Movilla and Bangor, are well worth inspection, whilst armorial stones abound in every churchyard.

The great Norman castle of Carrickfergus, with its bold central tower and surrounding ramparts, is still occupied, whilst Dunluce, the chief residence of the MacDonnells, overhangs the stupendous cliffs of the north coast, one of the finest sights in the three kingdoms. The Knights Templars had a stronghold at Dundrum, where a great circular keep and encircling battlements still defy the hand of Time.

Smaller castles abound on every hand both in Antrim and Down, showing how the Normans and subsequent settlers obtained a firm foothold, for the Irish were not given to castle-building.

In many districts primitive manners, utensils and customs are still common. Wooden vessels and quaint candlesticks, wheel cars and slipe carts, donkey creels and straw ropes, the scythe and the hand-reaper are the peasant's usual means of living and carrying on his ordinary husbandry. Nowhere can all the phases of archæology be better studied than in the north of Ireland.

Belfast—the population of which has increased from 185,000 to 350,000 since the last meeting—is well known as the industrial capital of Ireland. Its linen manufacture was in a flourishing condition in the thirteenth century, was still farther improved by the Huguenot refugees who settled in the neighbourhood in the seventeenth, and has now attained to the vastly greater scale made possible by modern machinery. Members of the Association will be given ample opportunities of visiting the most important works.

Inspection of the newer and no less important ship-building industry will also no doubt prove of the greatest interest, not only to engineers, but also to the travelling public who may care to see the birthplace of the White Star steamers, the first vessels in the design of which the true characteristics proper to steam-propelled vessels were fully grasped, though their great length at first evoked prophecies of disaster. Permission to inspect these yards has in recent years been only very sparingly granted, partly because of the time lost by the workmen from the distraction of their attention by visitors. Admission to these yards and engine shops will be accorded to members of the Association.

The handbook or guide to the district, a copy of which will be presented to each member, will contain specially prepared maps illustrating the topography, geology and antiquities of the district. The editors in charge of the work are Mr. F. J. Bigger, Mr. R. L. Praeger and Mr. J. Vinycomb.

The following subjects will be dealt with:—"History of Belfast and the District," by Mr. F. J. Bigger and Mr. J. Vinycomb; "Antiquities," by Mr. F. J. Bigger and Mr. W. J. Fennell; "Geology and Physical Geology," by Mr. J. St. J. Phillips; "Botany," by Mr. R. L. Praeger, Mr. S. A. Stewart and the Rev. C. H. Waddell; "Zoology," by Mr. R. Patterson, Mr. R. Welch, the Rev. W. F. Johnson and Mr. H. Lamont Orr; "Trade and Commerce," by Mr. A. G. Wilson.

Although the journey to Ireland includes the crossing of St. George's Channel, any discomfort that this may have entailed in the past has been reduced to a minimum in recent years by the excellent steamers now available. The shorter sea passages are *via* Holyhead and Kings-town or Greenore and *via* Stranraer and Larne. Members from England who prefer a night passage have a choice of three direct routes—*via* Fleetwood, Barrow or Liverpool. The first mentioned has the largest and best steamers; the others have one or two very good boats. Passengers from Glasgow *via* Ardrossan or Greenock will find the direct boats fairly good, though comparatively small, old-fashioned and often overcrowded; but the open sea passage is not long, and daylight passages are available.

The railway and steamboat companies will issue return tickets to Belfast from the principal stations in the United

Kingdom at a fare and a quarter on surrender of the usual voucher issued to members. From stations in England and Scotland such tickets will be available from September 8 to 22, in Ireland from September 8 to 28.

The local railway companies will issue return tickets at single fares to members during the meeting for short journeys, and the Belfast Street Tramways Company has kindly offered to issue passes to members for its cars free of charge. These cars pass the College gates. The accommodation for visitors has increased considerably since the last meeting in Belfast, two large and several smaller hotels having been established since then, and it is expected that a large amount of private hospitality will be offered by the citizens.

J. BROWN.

THE COLLEGES OF THE UNIVERSITY OF LONDON.

IN considering the educational needs of London it is important to remember that its extended area, its large population, and its exceptional municipal government all conspire to place the metropolis in a category by itself. Local authorities and other organisations which may serve to meet the requirements of the rest of England are not suitable for the unique wants of the greatest city in the world. When framing the Education Bill now before Parliament, the Government recognised this exceptional character, and very wisely postponed for a future occasion the consideration of the coordination of existing institutions of different educational grades in London, and of the addition of necessary schools and colleges. Similarly, the University of London, as reconstituted by the Commissioners appointed under the Act of 1898, is an institution of a unique character. No other university has a similar constitution, because nowhere, at home or abroad, are the conditions of the metropolitan area duplicated.

As was pointed out in an article in *NATURE* in 1899 (No. 1548, vol. lx.), if, as is done in the University of London Act, 1898, the area to be served by the London University is that included within a radius of thirty miles from the University buildings, it will be found that the University has, on a very moderate estimate, to meet the higher educational needs of about seven million inhabitants. It was shown in the article referred to that to accomplish this huge undertaking with any hope of success it would be necessary to make the fullest possible use of every existing institution which could be regarded as of university standing.

It is instructive in this connection to compare the provision of university education in some other districts with that to be found in the capital. The population of Scotland is under four millions and a half, yet there are, north of the Tweed, four largely endowed and well-equipped universities, and in addition a university college. The total population of the eight large towns in England provided with university colleges is under three millions and a half; while Wales, with a population of under two millions, has three university colleges. So that, even on the grounds that London should be made as well off as the other parts of Great Britain, it may be urged, fairly and temperately, that there is need for a great and immediate advance.

For these reasons amongst others we are glad to find that University College is making an earnest appeal for largely increased funds in aid of higher education and the facilities for research in London. If the teaching University of London is to be built up on existing institutions, it is of the highest importance that University College should be incorporated with it. A short time ago a joint committee of the council of the College and the senate of the University considered the subject of incorporation, and though they have not finished their deliberations, they have agreed on certain points, viz. :—

(1) For incorporation to take place the College must be free from debt.

(2) The University will not take over University College School. Accommodation must therefore be provided on a new site.

(3) The University will require extensive rearrangements of the Medical School.

All outstanding debts are already provided for by the Drapers' Company, which has generously become responsible for them to the extent of 30,000*l.* In addition, about 60,000*l.* have been contributed, a large part of which has been given on condition that the incorporation of the College in the University is really effected. But a much larger sum is needed. To provide a site and new buildings for University College School, to refit the present school buildings and to carry out other indispensable alterations, not less than 110,000*l.* will be required. For the completion of the College buildings, thus providing adequate accommodation for both teaching and research in the many different branches of knowledge, 250,000*l.* are necessary. For departmental expenses, including the maintenance of laboratories, libraries, &c., an annual income of 6000*l.*, or a capital sum of 200,000*l.*, must be provided. For the endowment of existing unendowed chairs and for the foundation of additional professorships a yearly sum of 20,000*l.* must be forthcoming, and this represents a capital sum of 700,000*l.* In short, to perfect and complete the College and to render fruitful its incorporation in the University a sum of at least one million pounds must be found.

If our merchants and manufacturers appreciated the importance, as a factor in our national commercial success, of the higher education of the people of London, there would be no difficulty in obtaining the sum required by the council of University College. As we have chronicled from time to time, the merchant princes of America have supplied for similar institutions in the States very many times the amount asked for by University College. The Leland-Stanford University of California has received nine millions sterling from private munificence; Chicago University has been given over two and a half millions, and many other universities have similarly been provided with their necessary millions.

University College is fully justified in its appeal to the public by a splendid record of activity during the seventy-five years of its existence. The standard of the studies carried on throughout this period has been that of a university, and the yearly output of original work has not been exceeded by that of any constituent college of a British university. We cordially recommend its claims to all those who are able to be munificent, and would suggest that no more suitable way of celebrating the Coronation in London could be found than the provision of this million pounds to begin the work of establishing in the capital of the Empire a teaching university worthy of our imperial aspirations.

But, as has often been pointed out in these columns, the responsibility for the provision of educational facilities which will bring us in line with other progressive nations rests, not upon individuals, but with the State. Private benevolence is never better employed than when it is used to assist higher education and research, but it ought not to be regarded as an excuse for the neglect of a national duty; yet over and over again this is done by statesmen of both parties. Mr. Balfour occupied this position on Wednesday of last week, when speaking at the Mansion House in connection with the distribution of prizes awarded under the commercial education scheme of the London Chamber of Commerce. He acknowledged that our nation "has lagged behind all the great nations of the world, not merely in commercial education, which is a portion of technical education, but also in many of the wider and more important aspects of national education." His remarks upon the importance of studying