science is still among educational appliances in general, it is extraordinarily large in proportion to the place permitted it when Dr. Tyndall commenced his courses a third of a century back. Scientific truth was valued and sought by the few then as now. They themselves scarcely regarded it as a subject which concerned the rest of the community. At large the most extraordinary obtuseness prevailed. The feeble attempts to impart a little superficial information in schools and lecture-halls rendered the darkness more visible. From the Royal Institution, as from the several centres occupied at various times by Mr. Huxley, poured a continuous expostulation against popular ignorance of the very bases of physical existence. The force of the appeals lay in their tone of moral anger at an apathy represented as a degrading baseness. Their special virtue was the determination, which never flagged, to abandon nothing of the exactness of science in popularising it. Prof. Tyndall, like his constant fellow-worker, has never for an instant looked upon the masses as entitled only to second-rate knowledge. They have had it of the highest and purest which it was within his means to supply. He has admitted no distinction between esoteric and exoteric teaching. He has not put off an audience even of children with the modern equivalents for the worsted orreries and Prince Rupert's drops of elementary philosophy fifty years ago. In his hands science for the most rudimentary educational purposes has been treated as reverentially as for the most transcendental. It has walked with head as erect in the Royal Institution theatre during the Christmas holidays as at a session of the Royal Society or the British Association. The result has been that, if the country has not learnt all it might and ought, it has learnt little which it will have to unlearn. It has not been condemned to drink either scientific dregs or scientific scum."

We regard the appearance of the article from which the above quotation has been taken as one of the results of the increased appreciation of science which has followed from the crusade in which Prof. Tyndall has played so important a part, and we confess it is not without misgivings that we contemplate a future, which we trust may be a distant one, in which Prof. Tyndall's unswerving advocacy of research for its own sake, and the example of his devotion to science, unsullied by considerations of filthy lucre, are no more among us.

We believe that all the arrangements at the Institution consequent upon Prof. Tyndall's retirement are not yet completed, but we learn that Lord Rayleigh has all but agreed to take some part, at all events, of the duties of the Chair.

This will be good news to all true friends of science. The Institution has a long and noble reputation to keep or to lose. In Lord Rayleigh's hands we know it will be safe.

PRIMROSES

THE very word awakens the pleasantest memories that remain to us from the time when we almost lived in the open air and enjoyed the intense delight of plucking wild flowers without let or hindrance; a pure and unalloyed delight actually experienced only in childhood, though it lives ever green in our hearts, and leavens the more serious pleasures of riper years. The primrose of primroses for all Britons is the wild yellow primrose that adorns woods, hedgerows, and banks from Cornwall and Sussex to the Shetlands, Orkneys, and Hebrides; for none is more lovely, though many among the endless variety spread over the north temperate and cold regions excel it in warmth and brilliancy of colouring. It is now about a year since botanists and gardeners met at South Kensington, whither they had brought their collections of living plants, comprising a large number of species and varieties of *Primula*, solely for the purpose of seeing and talking about primroses, polyanthuses, and auriculas; and the vast amount of information contained in the report of the proceedings of those assembled merits the attention of all naturalists, to say nothing of those who love flowers merely for the pleasure they afford the eye. Being hardy, primroses were among the first plants cultivated in this country when ornamental flower-gardening began, little more than three centuries ago. The old masters—Turner, Gerard, and Parkinson—introduce us to them, the first including in his "Libellus" only the *prymerose;* but at that date (1538) there seems to have been no such thing in England as the cultivation of flowers for their beauty alone. Gerard's first catalogue of plants cultivated in his garden at Holborn, and published in 1596, contains "primroses, birds eies, paigles, cowslips, and beares eares": respectively *Primula vulgaris*, *P. farinosa*, *P. veris*, and *P. auricula;* and this is the earliest English catalogue of professedly cultivated flowers. Parkinson describes in his "Paradisus" (1629) twenty-one sorts of "beares eares" or auriculas, and he mentions that the varieties cultivated were much more numerous than he intended describing. In the report alluded to, Shirley Hibberd states that in the year 1570 many artisans, driven from the Netherlands, settled in this country, bringing with them their favourite flowers, including the best of their auriculas. Thus it would appear that the auricula was one of the very earliest "florists' flowers" cultivated in this country; and it is hardly necessary to say that it is one of the chief favourites of the present day. One of the questions discussed at the Conference was the parentage of the true auriculas and the Alpine auriculas, a question upon which florists and botanists did not quite agree; and the only way of obtaining a solution of the problem is by experiment. It is nearly certain, however, that more than one species has been concerned in the production of the various cultivated races. On the one side it has been argued that the presence of true blue is almost absolute proof that they cannot all have descended from a species having yellow flowers; and it is true that both wild and cultivated plants which exhibit great variety in the colour of their flowers rarely offer both pure blue and pure red. The china-aster (*Callistephus chinensis*) is an exception, but whether both colours exist in the wild plant I cannot ascertain. Philip Miller, who was the first to cultivate it in this country, states that he received seeds from France of the red and white varieties in 1731 and of a blue in 1736. Amongst our native plants a very large number of those having normally blue or red flowers frequently produce white varieties; and I have myself picked red as well as white varieties of the bluebell (*Scilla nutans*), though it is true the red was not a very pure one. On the other hand, normally yellow flowers rarely sport into other colours.

To return to the primroses: the introduction in 1820 of the Chinese primrose added a permanently popular greenhouse flower, which is now raised by hundreds of thousands, indeed one might say millions, annually; and almost every florist of note has his special "strains" or varieties, varying in colour from pure white to crimson, and equally in the size and cutting of the leaves and flowers, which are either double or single. The double-flowered varieties are relatively difficult to cultivate, as they are propagated by offsets, and are less vigorous in constitution. Like the china-aster, this was unknown in a wild state until recently, when the Abbé David discovered it in the province of Hupeh.

Persons familiar only with the species of *Primula* hitherto mentioned can form no idea of the amount of variation exhibited by the whole genus, which embraces at least 110 distinct species, widely spread in the temperate and cold regions of the northern hemisphere, rare in

warmer countries; and one is found in the extreme south of America. But some further particulars of their distribution may be interesting. The forms in Europe are numerous, and the number of species to which they may be referred varies from twenty to nearly forty, according to the views of different botanists. They are most numerous in the Alps, where they constitute one of the most charming features of the vegetation. In Asia, too, the genus is generally diffused, though by far the greatest concentration of species is in the mountains of Northern India, where upwards of fifty species occur, some of them ascending almost to the altitudinal limits of flowering plants. Quite recently Mr. Franchet has described a dozen new species from Eastern Tibet and the Chinese province of Yunnan; and Eastern China and Japan possess their peculiar species; one at least of the latter (*P. japonica*) being now common in English gardens. An isolated species, the gigantic *Primula imperialis*, inhabits the mountains of Java, and the genus is represented in South-Western Asia, in Arabia, even to the neighbourhood of Aden, by *P. verticillata*, the same species recurring in Abyssinia; yet none apparently is found in the mountains of Morocco. In America the distribution of the genus is peculiar, no species having been found in Eastern North America south of Canada, while in the western and central regions three or four endemic species inhabit New Mexico, Arizona, and California, though in the last-named country the genus does not extend south of the Yosemite Valley, where the charming *Primula suffrutescens* is at home. The latest discovery is a new species in the Santa Rita Mountains, near the Mexican boundary. Altogether, nine species are now known from North America, five of which, those in the Arctic regions, are also natives either of Europe or Asia, or both. But the most remarkable fact in the distribution of the genus *Primula* is the presence of a species in the extreme south of South America—a species so closely allied to the northern *P. farinosa*, which is common to Europe, Asia, and North America, that it has been alternately held as a variety of it and an independent species. When writing his "Flora Antarctica," Sir Joseph Hooker could find no character whereby to distinguish the South American primrose as an independent species; but in his recent "Flora of British India" he states that it differs in having large granulate seeds. On the other hand, Dr. Asa Gray ("Synoptical Flora of North America") treats it as the same as *P. farinosa;* yet it is probable that he did not examine the South American plant, although he includes South America in the range of *P. farinosa*, therefore it can hardly be cited as an expression of opinion on the subject. The plant is common in Fuegia and the Falkland Islands. Even admitting that it is sufficiently distinct to be admitted as a species, the genetic connection with *P. farinosa* is so close that as a phenomenon in distribution the question is immaterial. The southern limit of *P. farinosa* in North America, so far as known, is Colorado; therefore there is a break of nearly 90° of latitude.

The greatest diversity is exhibited by the Asiatic species, alike in stature, foliage, and floral structure. In a comparatively restricted region of the Himalayas grow the moss-like species, scarcely an inch high, including the flower, such as *P. minutissima*, and the tall *P. sikkimensis*, with an umbel of twenty to thirty delicate yellow flowers on a scape 2 to 3 feet high. Between these extremes there are all sizes and several distinct types of foliage. The Javan species alluded to above is perhaps the largest of the genus, having whorl above whorl of golden flowers, though it is closely approached by the beautiful and many-coloured *P. japonica*.

The recent novelties from Tibet and Western China include some of the most distinct and peculiar forms of the genus, but none of them is in cultivation

There are many other interesting things connected with primroses, but I have perhaps already covered too much space. I may add, however, that by far the richest collection of living species was contributed to the show by the Royal Gardens, Kew—a collection largely brought together by Mr. G. C. Churchill, part author of the well-known book on the Dolomite Mountains, and cultivated by Mr. Dewar. It contained about fifty species, besides many hybrids and seminal varieties.

The report from which some of the foregoing particulars were extracted forms a part of the seventh volume of the Journal of the Royal Horticultural Society.

W. Botting Hemsley

ON THE ESTABLISHMENT OF THE ROMAN DOMINION IN SOUTH-EAST BRITAIN

BEFORE entering upon the matter which I have stated as the subject of this paper, I think it will be well to premise three notes: (1) on the general authority for the accuracy of the history; (2) on the geography of the approaching coasts of Gaul and Britain; (3) on the pronunciation of names delivered to us in the spelling of the Greek language.

(1) The account of the invasions which I adopt is that of Dion Cassius. His history, in general, is orderly and full. He appears to have been a man of rank, and doubtless had command of State documents. He seems to have been well acquainted with every movement in the Courts of several successive Emperors. He has carefully explained why he was unable to continue his Roman history beyond the time of Severus with due accuracy. The time of the invasion of Britain was about 170 years before the composition of his history—an interval almost equal to the length of our Hanoverian dynasty; and his account of the wars in Britain may claim to be considered as trustworthy as our histories of the campaigns of Marlborough.

(2) In regard to the geography, it is to be observed that the coast-tract in the north of France, apparently from the mouth of the Seine to the mouth of the Scheldt, is called Γαλατία (Galatia). This name occurs at least twice, in separate books of Dion. By Ptolemy it is called Κελτογαλατία Βελγική.

(3) The English writers who have given any attention to this history have had, I believe, no knowledge of the pronunciation of the Greek words. Mitford, however, in his "History of Greece," had pointed out some of its peculiarities. The difficulty is now greatly removed by the publication, at Boston, U.S., of the "Grammar of Modern Greek," by E. A. Sophocles. I extract the substance of his notes which apply best to the present purpose:—

β is the English *v*, or sometimes *bh*.
δ is the English *hard th*, as in *that, those*.
θ is the English *soft th*, as in *thin, thorn*.
μπ is the English *b*.
νδ or *ντ* is the English *d*.
ι is the English *ee*, as in *seen*.
ου is the English *oo*, as in *soon*.

There is no reason to think that the pronunciation has changed for many centuries. In the Byzantine Greek histories of the Crusades, there are many opportunies of making comparisons of the Greek and the Latin names of places and persons, which appear to follow the same rules as at the present time.

Thus, the name given by Dion to the lady who commanded the Britons in their grand movement against the Romans is spelt by him Βουνδούικα. Interpreted by the list of equivalents just given, it becomes in English letters and sounds, Voo-doo-ee-ka; and this I believe to be the true rendering of the name. Still, I dare not depart from the established custom; and I shall therefore (unwillingly) adhere to the long-used English spelling, "Boadicea."