

invariable, et quelles consultent ensemble la Nature pour arriver à ce résultat important.

" Si cette Idée vous paroit juste, Monsieur, si vous pensés qu'un grand bien doit en resulter, c'est à vous qu'il appartient d'en assurer le succès, et j'ose vous le recommander : trop long temps les deux Nations se sont devisées pour de vaines pretentions ou de Coupables Interets, il est temps que deux Peuples libres associent leurs efforts et leurs Travaux pour une Recherche utile au Genre Humain.

" J'ai l'honneur d'être avec des  
" Sentimens respectueux,  
" Monsieur, votre très humble  
" Et très obéissant serviteur  
" L'EVÊC. D'AUTUN.

" To Sir John Riggs Miller, Bart.

" Member of the House of Commons, London."

(The English printer seems to have taken some liberties with the foreign language.)

Parliament was dissolved on June 11, 1790, so the committee ceased to exist, and it appears that Sir John Riggs Miller was not re-elected in the next Parliament.

I have been unable to ascertain the date when the Bishop of Autun made his proposition to the National Assembly, and if, in doing so, he referred to the action taken in the House of Commons. In the pamphlet of Sir John Riggs Miller is a reprint of a paper which the Bishop of Autun sent to all the members of the National Assembly, with a note attached saying that he considered that it would be preferable to print his proposition than to make a speech on the subject.

This paper contains the following paragraph, when referring to the measurement of the pendulum:—" Il m'est impossible de douter que l'Angleterre, qui dans ce moment paroit vouloir s'occuper de la reduction de ses mesures, avertie par votre détermination et invitée par vous, ne se réunire à la France pour l'exécution d'une entreprise que nos relations de commerce doivent rendre commune et dont le résultat doit appartenir un jour au Monde entier."

It will be a surprise to many to learn that there was any connection, even of the remotest kind, between the action of the British House of Commons and the proposition which ultimately led to the metrical measures and weights.

The committee that was appointed by the French Academy on August 22, 1790, reported on March 19, 1791 (" Histoire de l'Académie Royale des Sciences," Année MDCCLXXXVIII., published in 1791, pp. 7-16). The committee considered three proposed standards of length, the length of the seconds pendulum at the latitude of  $45^{\circ}$ , which was rejected in consequence of its involving the artificial element of time; the measurement of an arc of the equator, which was also rejected, because of the difficulties that would attend such an operation in an uncivilised country; and the measurement of an arc of the meridian, which was adopted, and the 10,000,000th part of the quadrant was selected as the standard of length.

The account given by Delambre of the measurement of the arc of the meridian from Dunkerque to Barcelona is most interesting; he was commissioned to measure the northern section whilst Méchain undertook the southern portion. Delambre left Paris with orders from the King, and before long he found them of little use; he had a difficulty in obtaining money for the expenses of the work, and at one time he was dismissed, as it was thought that his opinions were not in accord with those prevalent in Paris. Later he was permitted to continue the undertaking. He found that many of the church towers and spires which had been used in the survey of 1740, and which he intended employing again, had been destroyed; he could not use signal fires, for they were thought to be signals to the enemies of the country, and when he covered some of his stations with white sheets, so that they might be more visible at a distance, they were supposed to be standards of the counter revolution, and it was necessary to place blue and red bands on them to calm the suspicions of the populace. When Méchain had completed his work in Spain he was not allowed to return to Paris, and although he finished his portion of the survey, he died before the determination of the standards had been brought to a conclusion.

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Notwithstanding all these adverse circumstances and disappointments, Delambre's account is remarkably free from bitterness.

It had been determined to submit the whole survey to a committee of foreign scientific men, so that it should have an international character, and the meeting was fixed for 15 vendémiaire an 7 (the 6th October, 1798); the survey, however, was not completed until about two months later. The account of the invitation to this final meeting is best given in Delambre's own words:—

" On a vu que le premier projet avoit été d'inviter la Société royale de Londres à concourir avec l'Académie des Sciences à la fixation de l'unité fondamentale; mais l'unité projetée étoit alors la longueur du pendule. La mesure de la méridienne étoit une entreprise bien plus considérable, et d'une trop longue durée pour qu'on pût se flatter de la voir terminer par les commissaires réunis des deux nations, lorsque tant de causes probables et prochaines pouvoit troubler la bonne intelligence entre leurs gouvernemens. L'événement ne prouva que trop tôt combien cette crainte étoit fondée. Mais les mesures terminées, avant d'en déduire les conséquences, il n'y avoit plus aucun inconvénient, on devoit au contraire trouver un avantage réel, à soumettre le travail à l'examen de tous les savans de l'Europe; et toutes les puissances amies ou seulement neutres furent invitées à nommer des députés à ce congrès d'une espèce toute nouvelle." (Méchain and Delambre, " Base du Système métrique Décimal," Paris, 1806. Tome i. " Discours préliminaire," pp. 85-86.)

" Les savans étrangers venus pour prendre part à ces travaux étoient MM. Æneae et van Swinden, députés bataves; M. Balbo, député du roi de Sardaigne, remplacé depuis par M. Vassali Eandi, envoyé par le gouvernement provisoire du Piémont; M. Bugge, député du roi de Danemarck; MM. Ciscar et Pédrayés, députés du roi d'Espagne; M. Fabbroni, député de Toscane; M. Franchini, député de la République romaine; M. Mascheroni, député de la République cisalpine; M. Mutedo, député de la République ligurienne, et M. Trallès, député de la République helvétique" (*loc. cit.* p. 92).

At that time England could not have been considered one of " les puissances amies," for war was declared by France against England in 1793, and continued for nearly nine years.

It has been the custom to discredit the Royal Society with having instigated the refusal of the French invitation, but there is no indication whatever that the matter was at any time referred to the society. The council minutes do not contain any mention of the invitation, and if the society had formally or informally suggested or approved of the refusal, it is inconceivable that the Duke of Leeds, who was at the time a member of the council, although a not very regular attendant at the meetings, would have omitted to mention such a support of his action. With regard to the absence of any English men of science on the last committee of revision, it seems certain, from Delambre's statement, that an invitation was not sent, and the minutes of the council of 1798 and 1799 are silent on the subject.

Without the kind assistance of others it would have been impossible for me to have obtained the information above given, and I take this opportunity of tendering my sincere thanks to the Marquess of Salisbury, Sir Eric Barrington, Sir Courtenay Ilbert, Dr. R. T. Glazebrook, the officials of the Royal Society and of the Public Record Office, for their help, and lastly to my former colleague, Prof. Alfred Lodge, who first put me on the right track by furnishing dates which much assisted the search.

HERBERT McLEOD.

#### UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—The Sedgwick prize in geology is awarded to H. H. Thomas, B.A., Sidney Sussex College.

Z. U. Ahmad, B.A., Trinity College, has been elected to the Isaac Newton studentship in physical astronomy.

The Medical College, Lahore, has been added to the list of recognised schools of medicine.

A syndicate is to be appointed to draw up a scheme of instruction and examination in mining engineering, with a view to the requirements of the Coal Mines Regulation Amendment Act, 1903.

THE Secretary of State for War has, on the nomination of the Senate of the University of London, appointed Sir Henry Roscoe, F.R.S., to be a member of the War Office Advisory Board for Military Education, as a representative of the university.

THE King has been graciously pleased to promise a donation of 100 guineas in response to the appeal of the Senate of the University of London for funds to build and endow an Institute of Medical Sciences under the control of the university. A large sum is needed to carry out the scheme. Donations, which may be extended over a period of three years, should be sent to the honorary treasurers, Dr. J. K. Fowler and Mr. H. T. Butlin, at 35 Clarges Street, W.

THE Senate of the University of London has adopted the following resolution:—"That the Board of Education be informed that the Senate, while in no way wishing to cause any postponement of the appointed day, think it desirable, in the interests of education in London, that the University should be closely associated with the Education Committee to be appointed by the London County Council, and that persons experienced in education should be members of that committee."

THE new Paddington Technical Institute of the London County Council was opened by Sir Arthur Rücker on February 27. The premises have been acquired for a sum of 15,000*l.*, and are now admirably equipped as a technical institute. Sir Arthur Rücker, in his address, said that the new institute represents what those in connection with the London University have long desired to see carried out—the union of the forces which have been engaged already in the work of teaching. What is being done at Paddington must be done on a larger scale elsewhere throughout the metropolis so as to bring the schools into closer contact with the university, for until the combination of forces was effected they could not realise the full advantages of the system they wanted to inaugurate. Cooperation will be the note of the education in the future. The chairman of the London Technical Education Board, in proposing a vote of thanks to Sir Arthur Rücker, mentioned that in the course of a short time it was intended to erect a power-house at the new institute and establish an engineering laboratory for the purpose of carrying on a motor-car school.

At a meeting of the Senate of the University of Wales, held at Bangor, it was resolved to present an address of congratulation to Sir Henry Roscoe in connection with the forthcoming celebrations. It was also unanimously desired by the Senate that Principal Griffiths should represent the university in his official capacity of Vice-Chancellor at the opening of the new laboratories by the King at Cambridge. The memorial circulated by the Royal Society with reference to the teaching of science in schools was read by the Vice-Chancellor and discussed. A protracted discussion took place on a motion relating to the desirability of framing a scheme for the matriculation examination by which Latin would cease to be compulsory, and on a division taking place the motion was carried by a majority, a committee being appointed to bring the matter before the Senate in a more definite form later on. In connection with a recent petition presented to the University Court by the Mayor and an influential deputation from Swansea on behalf of the Swansea Technical College, a committee was appointed to draft a scheme, to be submitted to Parliament, for conferring on that college certain privileges of affiliation to the university.

LORD KELVIN distributed the prizes and certificates, gained during the past session, to the students of the Northampton Institute, Clerkenwell, on February 26. During the course of his address, speaking of the work of the London Technical

Education Board, Lord Kelvin said:—"Many must feel regret that that board will cease to exist in the course of a few days. The new board which is to take its place will have all kinds of education under its charge—primary, secondary, and technical. It will need more money, and I hope it will be courageous and not fear to make a call on the rates when it is convinced that the payment of them will be for the benefit of the ratepayers." Continuing Lord Kelvin remarked:—"When you think of the great discoveries of Faraday in England and of Henry in America, and the succession of workers from their time to the present day who have added so much to our knowledge, you cannot help being struck with the enormous progress which science has made within a comparatively short period; and perhaps that progress has been even more remarkable and striking at the beginning of the twentieth century than during the whole of the nineteenth century. Many of these discoveries were for the moment in the realm of pure science, presenting no prospect of practical application; but what is to be thought of a scientific investigator who only looks for an immediate practical application of the result of his labours? The electrical discoveries of Faraday and Henry would never have been made if those great men had contented themselves with asking *Cui bono?*—who will benefit by them? The every-day workman would be all the happier for knowing something of the laws of nature developed in the work he is called upon to perform. The habit of mind of thinking scientifically and bringing scientific knowledge to bear on the practical work of life not only contributes to the work being well done, but also to the richness and mental wealth of the work."

THE Prince and Princess of Wales paid a visit on February 24 to the Battersea Polytechnic, on the occasion of the tenth anniversary of the opening of that institution by the present King. The Prince of Wales distributed the prizes and certificates gained by the evening students during the past year, and Her Royal Highness opened a number of new rooms which form an extension of the domestic economy department. Addresses of welcome were read by the chairman of the governing body of the polytechnic and by the Mayors of Battersea and Wandsworth. The Prince of Wales, in replying, pointed out how much the success of the London polytechnics was indebted, first, to the far-seeing thought of the Charity Commissioners, who twenty-one years ago suggested that the funds of certain ancient City charters should be devoted to the establishment in different parts of London of polytechnic institutes, and also to the City parochial foundations and the Technical Education Board of the London County Council. In the course of his address to the prize-winners, His Royal Highness remarked:—"Probably at no time in the history of our country has there been a greater demand upon the intellectual powers than there is to-day. Keen competition and rivalry characterise the existing relations between communities and nations. Prof. Huxley some years ago pointed out with regard to our industries that we were in the presence of a new struggle for existence; and more recently Sir Norman Lockyer, in his address to the British Association last year, went further, and declared that the scientific spirit, the brain-power, must not be limited to the workshop when other nations utilise it in all branches of their administration, and he declared that universities and other teaching centres are as important as battleships and big battalions, and are, in fact, essential parts of a modern State's machinery." By thus directing attention to the principle that national development depends upon the provision made for the cultivation of brain-power, the Prince of Wales has advanced the plea put forward by Sir Norman Lockyer in his presidential address at Southport. The Prince evidently recognises that the progress of a nation is promoted by the forces of higher education and research; and his conviction should encourage far-seeing statesmen to face seriously the question of organising the forces which will make us equal to Germany or the United States in the struggle for commercial supremacy. It must be clearly understood that the scientific spirit—inquiring, critical, and progressive—is essential in the polity of a modern State; and for this reason it is to be hoped that the Prince of Wales's remarks will be well considered by our political leaders.