strong University party in Budapest opposed to its existence; and they give it no countenance either by their presence or otherwise. Nevertheless we are persuaded that the influence of the Association is good.

Debreczin is a great Calvinist centre. It has been called the "Rome of Calvinists." There is a Calvinist College which educates nearly 2,000 children, boys, and young men. Roughly there are 2,000 Calvinist parishes in Hungary, containing 2,000,000 souls, and of these 560 parishes and 800,000 souls are under the jurisdiction of the Bishop of Debreczin. The Bishop was President of the Association and the Sectional Meetings were held in the College. Great toleration exists in religious matters throughout Hungary, and the Calvinist Bishop and Roman Catholic Præpostor entered the Hall together and sat next to each other during the delivery of the Presidential Address.

On the evening of the first day of meeting, the train from Budapest which conveyed a number of members, was met at the station by the town authorities, and an address of welcome was delivered. We then went to the Town Hall, registered our names, received various publications including a fine volume giving a complete history from every point of view of the town, which has cost the municipal authorities 6000 florins. In the evening we all dined together. On the following day the Presidential Address was delivered at 10 a.m. This was followed by the reading of letters of salutation from various parts of Hungary. A paper was then read by Prof. Török one of the Vice Presidents on the Meteorites of Hungary, and specially on the Kaba meteorite which fell near Debreczin in 1857. This was the period of the Austrian domination. and many meteorites had already been taken from Hungarian museums and transferred to Vienna. A demand was at once made for the Kaba meteorite to be similarly transferred, but the Debreczin authorities answered, "It is true that you have a right to everything on and beneath the earth of Hungary, but this came from Heaven. Hence we propose to keep it here." And it remains in the Debreczin Museum. After the meteorite paper an eulogium was pronounced by Dr. Popper on Dr. Albert Kain, a recently deceased and prominent citizen. A short paper on children's diseases was then read by Prof. Bódogh, and the proceedings terminated at 1 p.m. Soon afterwards the members sat down to a public banquet of a very festive nature, which lasted till nearly 5 o'clock, and was notable for the national dishes, and profusion of native wines and mineral waters; of the latter Hungary possesses no less than *eighty* different varieties.

At 5 o'clock a lecture was given by Dr. Kiss on Hatvani, a professor of physics in the Debreczin College of the last century. He studied in Leyden and was the first to introduce experimental illustration into the college lectures. A good deal of his apparatus was exhibited and the air-pump with a huge horizontal barrel two feet in length and three inches in diameter, was particularly interesting. In principle it scarcely differed from Robert Boyle's second air-pump of the preceeding century.

At 9 a.m. on the following day the three sections were formed, and addresses delivered by the Presidents. The Physical Section was presided over by Prof Hunfalvi of Budapest, and his address was mainly devoted to the Meteorology of Hungary. He dwelt particularly on the great evils resulting from the cutting down of forests, and the climatal changes likely to result therefrom. As wood is commonly burnt for fuel in Hungary, and the winters are very severe, the destruction of forests is proceeding at a great rate. The address was considered of such importance that it was ordered to be printed separately and distributed all over Hungary. The Medical Section was presided over by Prof. Török, and the Economic Section by Prof. Kiraly. The meetings closed at noon, and recommenced again at 3 p.m. At 5 to a very crowded audience Prof. Antolik gave a lecture on the electric discharge, with some original experiments.

The Sectional Meetings were continued the next day and in the afternoon an excursion was made through the Debreczin Forest to an Agricultural College founded by the Government for the instruction of land agents and managers of large estates. The course extends over three years, and the students pay nearly £21 a year. The institution is a large model farm possessing a good deal of land, and very complete farm buildings in which fine breeds of cattle, horses, and pigs are reared. The bulls and horses are of particularly fine breed. In returning we halted at a forest hotel, dined, and afterwards danced, the national *Csárdás* being of course the most popular. Sectional meetings were continued during the following day, and on August 27 the closing meeting was held. In the afternoon there was an excursion to the salt lakes of Nyiregháza.

The invitations were written in Latin, as of course Hungarian is a language, not much known out of the country. They were worded as follows:—

"Doctores Medicinæ et naturæ scrutatores Hungariæ, hoc anno Debrecini a 20-27 Mensis Augusti, Congregationem Scientificam sunt celebraturi.

"Cum ad hoc Congregationem D. . . . M. . . . N. . . . solemniter invitaremus, simul impense, rogamus, ut nos gratissima sua præsentia honorare, vel aliis hunc honorem delegare, congregationisque medicorum et naturæ scrutatorum in cognoscendio rerum causis positum studium favore et si lubet opera prosequi non dedignetur.

"Dissertationes de naturâ rerum agentes, secundum statuta congregationis, quâcunque linguâ haberi possunt.

"Sincerissimam quam possumus salutationem exhibentes perseveramus. Debrecini, 4 Mai, 1882."

A few years ago Latin was commonly spoken by educated Hungarians, and Latin words are now frequently used in intercourse with foreigners. One morning when I was looking for my host, his little son gravely gave me a letter which he had rapidly penned, expressed with the following charming naiveté:—"Domine Professor! Meus pater est in Collegio. Si Vestra Dominatio alloqui illum vult, voco statim domo. Hora nona certe redibit." And while on the subject of colloquial Latin in this country, we are fain to remember the story of the English sailor, who was rolling a gigantic piece of tobacco in his mouth, to whom a Hungarian, unused to the custom said, pointing to the distended cheek, "Quid est hoc?" whereupon the sailor answered readily, "Hoc est quid."

It is impossible to conclude this short notice of a very interesting scientific meeting, without mention of the extraordinary cordiality and hospitality of the town of Debreczin. G. F. RODWELL

THE BRITISH ASSOCIATION

THE number of papers in the two leading departments of the Biological Section were very few this year, as indeed they have been for some years, and therefore it was decided by the General Committee that the number of departments of that section be reduced from three to two. Next year's meeting was fixed for September 19, with the view of bringing it towards the close of the holidays rather than in the middle of them. A formal resolution was also passed authorising the Council to make the best arrangements they can for securing an equal representation of all the sections at the meeting proposed to be held at Montreal in the succeeding year. One or two speakers seemed to doubt whether the matter could be regarded as finally settled. A suggestion was made that a meeting should be held in this country as usual, and that the vice-presidents should go to Canada as delegates. It was stated on both sides that members were absent at Monday's meeting whose votes would have materially affected the decision arrived at. It is

matter of satisfaction that Southport contains numerous public meeting-places close to each other. The scattered position of the Sections at the present meeting has been a very serious obstacle to members wishing to hear papers in different Sections on the same day. This has been especially the case in Section C, which, being half a mile from most of the other Sections, seldom obtained a good audience, and indeed was only filled when the popular subject of the Channel Tunnel was brought before the Section by Messrs. Boyd Dawkins and De Rance.

REPORTS

Report of the Committee consisting of Prof. Roscoe, Mr. Lockyer, Prof. Dewar, Prof. Liveing, Prof. Schuster, Capt. Abney, and Dr. Marshall Watts, appointed at the York Meeting to prepare a New Series of Wave-lengths Tables of the Spectra of the Elements.—This Committee report that they have lately obtained an instrument for the more exact performance of the process of graphical interpolation, constructed by Messrs. Cooke and Sons of York. And since this instrument has only been received within the last few weeks they are not in a position to make a detailed report to the Association.

The Report of the Committee consisting of Prof. Balfour Stewart, Thorpe, and Rücker, appointed at the York Meeting to Report on Methods of Calibrating Mercurial Thermometers was read by Prof. Rücker. Thermometer tubes are in general of unequal bore in different parts, and the indications of the instruments will thus be erroneous, unless these irregularities are allowed for. If a short column of mercury broken off from the main mass in the bulb and tube be measured in different parts of the tube, its length will be greater in the narrower, and less in the wider parts. By means of such measurements the correction for the inequalities in the bore can be applied in two different ways distinguished as methods of calibration and correction respectively. In the first the length of the column of mercury is measured in various parts of the tube before the scale is etched on it, and the lengths of the divisions are then so adjusted as to make equal differences of scale readings correspond to equal volumes. In the second the tube is in the first instance furnished with a uniform scale, and a table of corrections is afterwards drawn up, by means of which the same end is attained as before. In either case the measurements have to be made in some systematic manner, and a number of different methods of performing the observations and calculations have from time to time been proposed. That in use at the Kew Observatory is the simplest of all, while the more elaborate methods have for the most part been proposed by German writers. The report consisted of a minute discussion of the relative merits of these various methods, the chief of which had been applied by the Committee to the same thermometer, so that the results could be readily compared. The measurements for this purpose were made in the Physical Laboratory of the Yorkshire College. The methods chiefly investigated were Gay Lussac's, Hällström's, Thiessen's, Marek's, Rudberg's, and Bessel's, both as modified by von Oettingen, and also with further modifications introduced by Professors Thorpe and Rücker. As the result of a long theoretical and experimental investigation, the Committee conclude that labour is saved and equal accuracy secured by the repetition of the simplest method of correction (Gay Lussac's), instead of the employment of more elaborate and theoretically more perfect schemes.

Report of the Committee, consisting of Professors Odling, Huntington, and Hartley, appointed for the Purpose of investigating, by means of Photography, the Ultra-Violet Spark-Spectra emitted by Metallic Elements and their Combinations under Varying Conditions.—This report was drawn up by Prof. Hartley, and communicated to the Section by Prof. Huntington. The object of this investigation was to give, first, a means of readily identifying the metals by photographs of their line spectra; secondly, a knowledge of the alterations producible in the spectra of metallic salts by the presence of various non-metallic elements; thirdly, a knowledge of the alterations caused by the dilution of metallic solutions; fourthly, a possible means of performing rapid quantitative determination of metallic substances by the aid of photography, and obtaining permanent records of the results. These objects have been more or less completely attained, and the results obtained have been the subject of two communications to the Royal Society, which contain an account of the elucidation of the following points:—(1) The solution of the practical difficulty of obtaining photographs of spark spectra of metallic salts from their solutions; (2) the comparison of spectra yielded by metallic electrodes with those obtained from saline solutions; (3) the variations in the spectra caused by dilution of saline solutions; (4) the sensitiveness of spectrum reactions under certain conditions; (5) the variation in the spectra of metals caused by alterations in the intensity of the spark employed. A comparison of the spectra of solution of salts with those of metallic electrodes show that in almost all cases the lines of the metals were produced from the solutions. The non-metallic constituents of salts do not yield any marked series of lines. The spectrum of aluminium, as obtained from pure solutions, is free from a group of short or discontinuous lines, which the author has shown to be due to iron. In estimating the relative proportions of the constituents of alloys or minerals, only those methods are to be recommended in which solutions are used, as in this way the non-homogeneity of the substance under investigation can alone be obviated. With regard to the reversal of metallic lines, it is pointed out that over-exposure suffices to produce reversal without materially influencing the rest of the spectrum; and in order to obviate this result, it is recommended that comparative exposures should be methodically employed to confirm the accuracy of observations made entirely by the aid of photographic representations and of spectra. This is especially the case where gelatine or other dry plates containing organic matter are employed.

Report of the Committee on the Lunar Disturbance of Gravity, by G. H. Darwin.—Shortly after the reading of the first report last year at York, it was found that the instrument with which he and his brother had been working, had broken down, and this together with a series of unforseen circumstances, had prevented their continuing their observations. But he still had some remarks to make on the subject. From a remark made by Signor de Rossi on an observed connection between barometric storms and the disturbance of the vertical, he had been led to make some investigations on the mechanical effects caused by variations of pressure acting on an elastic surface. When a heavy body rests on the surface of the earth in the neighbourhood of a pendulum, the direction of the pendulum, or the vertical, appears to change, a change due to two causes: first, an actual change due to the attraction of the heavy body on the bob of the pendulum; and secondly, an apparent change due to an actual change of level caused by the elastic yielding of the surface. Sir W. Thomson had pointed out to him a very remarkable relation between those two effects. If a heavy mass of any form be placed on the surface of an elastic plate of great thickness, the deflection produced on a plumb-line suspended over any point of the plate by the attraction of the mass is proportional to the slope produced in the plate at the same point by the elastic yielding to the mass. Applying this to the case of variation of barometric pressure, and supposing the earth to have a rigidity between that of glass and copper, he found that the variation of slope between two places 1500 miles apart due to a difference of 5 cm. of barometric height would be 0″·0117, whilst if the attraction of the air be included, it would amount to 0″·0146. Thus, considering two cases of high pressure to right and left, there would be a difference in the position of the plumb-line relatively to the earth's surface of 0″·0292. The amplitude of oscillation at Cambridge due to lunar disturbance of gravity, as computed on the hypothesis that the earth is rigid, was in last year's report shown to be 0″·0216, whilst the instrument was capable of detecting changes of 0″·01. As these quantities were all of the same order of magnitude, he came to the conclusion that it was hopeless to expect determinations of the lunar effect by experiment based on the pendulum method. There was another effect due to change of barometric pressure, viz an alteration in the altitude of the surface. Under the same circumstances as above the difference in height at the two places would be 9 cms. The same reasoning applied to the tides would show that there would appear to be a greater rise and fall of tides that actually exists. This effect is in the opposite direction to that due to the elastic yielding of the earth on account of the tide-rising forces of the sun and moon. Near a coast line the apparent change of the vertical between high and low tides would be far more considerable than in the case of variation of barometric pressure. With a difference of true height of water between high and low tide of 40 cm., and with a tidal wave-length of 3900 miles, the change in slope at a distance of 1 kilometre from the water's edge would be 0″·076.—Sir W. Thomson pointed out a method by which the effect of the attraction of the