

**First meeting of the British Association for the Advancement of Science /
[Jas. F.W. Johnston].**

Contributors

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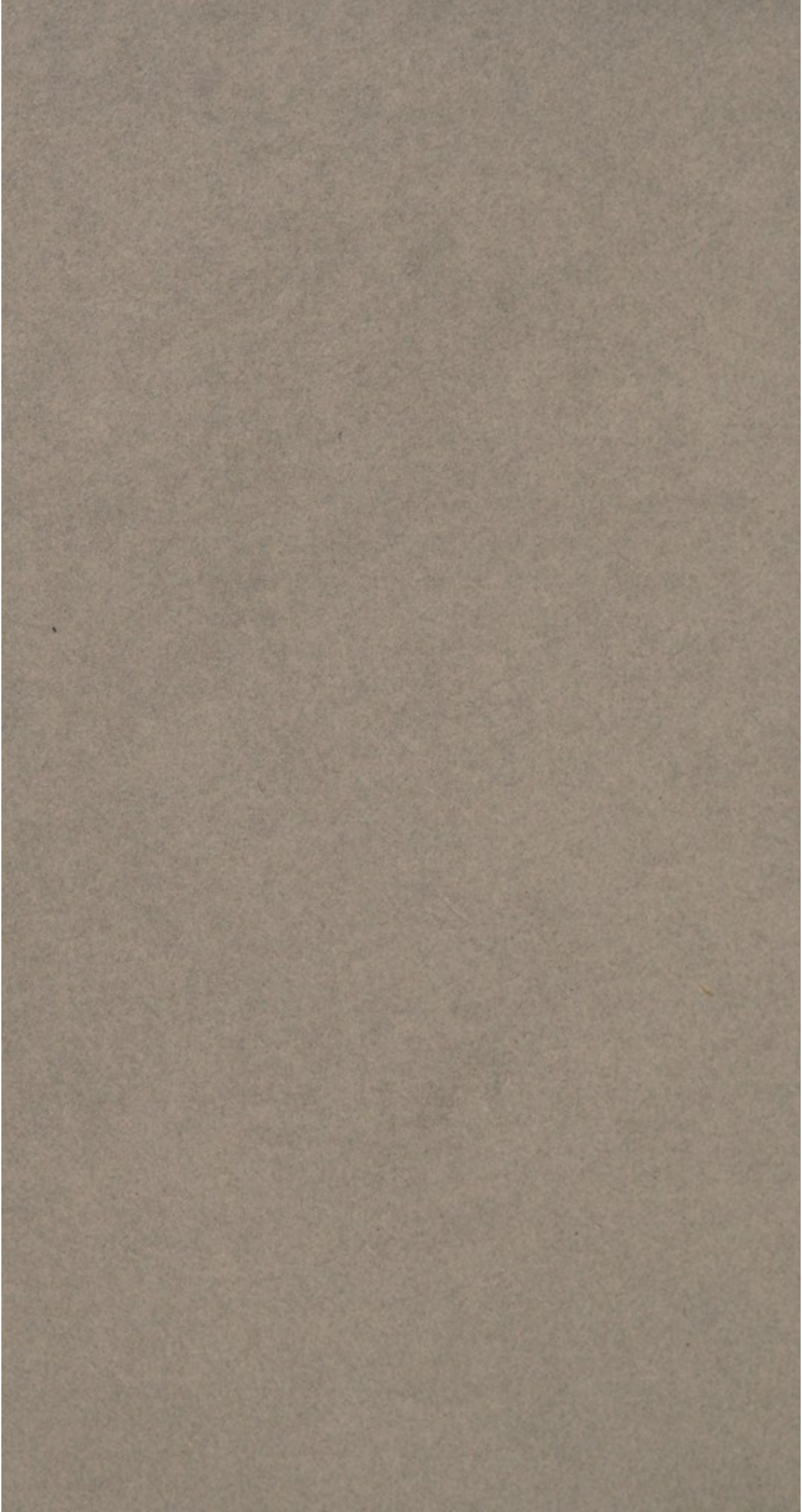
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FIRST MEETING
OF THE
BRITISH ASSOCIATION
FOR THE ADVANCEMENT OF SCIENCE,
HELD AT YORK IN SEPTEMBER 1831.

By JAMES F. W. JOHNSTON, A. M. &c. &c.

(From the *Edinburgh Journal of Science*, N. S. No. 11.)

THE *Great Scientific Meeting* at York has taken place, and it has exceeded the most sanguine expectations of its projectors. It had been spoken against,—it had been written against,—private feelings had been awakened against it,—public bodies had regarded it with jealousy, and their members had deemed it necessary to refuse it their countenance,—yea, some decidedly scientific men, who have illustrated their own departments, and of whom their country has reason to be proud, had been induced to set their faces against it ;—yet in spite of all these hindrances, the experiment of a great national meeting has been tried, and it has succeeded. The foundation of a general national institution has been laid, which, fixed to no spot, is free to range from city to city of this great empire, gathering into its stores the genius and information of every district, awakening men, wherever it bends its footsteps, to the dignity and importance of science, and scattering into every corner as it passes through the land some new seeds of valuable discovery, which duly fostered may ripen into a harvest of resources hitherto not known, and therefore undeveloped,—an institution which, limited to no science, can comprehend within its

ample bounds the votaries of every branch of natural knowledge, ready each, and willing to eliminate by the conjoint researches of all, those complicated mysteries of nature which the most ardent philosophers are ever meeting with in their single and isolated investigations, and which even the united efforts of all the cultivators of any one department could never have revealed. Modern science has indeed for some time demanded the establishment of such an association. For the limits of many branches of knowledge which men a few years back could define and clearly explain the scope of, so as to draw a distinct line between them and the other departments bordering most closely upon them,—have now been pushed forward so far as to have overpassed each other, and intermingled their mutual learning; and thus, instead of so many separate and minor fields of investigation as in former days, the philosopher can see now but one wide field of universal science, wherein the fruits of each department are seen growing and intermingling with each other, and stretching over so vast a space as to baffle the most enlarged intellect to embrace it. But what one single mind or one single branch of study cannot effect, the united efforts of many may achieve; and while the chemist, and the botanist, and the geologist combine with the mathematician and the physical philosopher, to unravel the same complex and interwoven relations of nature, we need not despair of seeing a light hitherto un hoped for scattered over her most extensive and most hidden operations. The truth of this view of the present state of human knowledge, and the method of cultivation it calls for, the more it is thought of will, I am convinced, become the more apparent. And when the political excitement of this period has passed away, and men's minds have settled down again to that quiet and thinking state which is most necessary to the study of nature, they will recognize in the British Association an engine of efficacy and power sufficient not only to arrest the decline of science, but to achieve more numerous conquests in philosophy than Britain has yet to boast of.

Were there then no advantages to result to men of science from mutual and personal intercourse—were there no little feelings of jealousy to be removed—no controversial disputes

or scientific differences to be made up—no misconceptions to be cleared away—no false estimates of the talents or temper of our fellow labourers to be corrected—no gratification to be derived from seeing and conversing with them ;—and were no increase of knowledge to be acquired—no new facts more speedily and better learned and understood—and no new views elicited by mutual communion and discussion among men of the same science ;—were no new lights to be struck out by these discussions—and no new subjects of inquiry suggested and recommended,—still there remains in the view now given of the present state of science a sound and sufficient, if not an imperative, reason for the establishment of such a general institution as the British Association professes to be. There is a new, a fertile, and a boundless field of mutual co-operation spread out before it. The botanist meets with a chemical problem in his researches into the physiology of plants, he refers it to his chemical associates, and by them it is solved. The chemist obtains a series of experimental results, which, put into the hands of the physical section, may form the germ of a new branch of physics. The zoologist, the geologist, the mineralogist, and the chemist, are so linked together, that they cannot go far without being either necessitated to seek, or being benefited by obtaining the suggestions of each other. Thus all are mutually dependent ; and whatever tends to cement the union of the sciences, and to bring their votaries into more frequent and more intimate communion, must do much towards facilitating the progress of knowledge. On this ground alone, then, of professing to bring men of all sciences together, might the British Association rest its claim to general approbation and support.

The council of the Philosophical Society of York deserve well of scientific men for the readiness with which they came forward to superintend the arrangements for this general meeting, as well as for the zeal and spirit they manifested throughout the entire week of the assembly. It was desirable that the first meeting should be thus supported by the exertions of active and zealous men, both that the new association might be built upon a sure foundation, and that future committees in

other cities might have an example at once to stimulate and direct their preparations.

The choice of York as the first place of meeting has therefore proved a happy one. It was suggested chiefly by its locality as a most central city, and the advantage it possessed in a prosperous and well arranged Philosophical Society, together with the assistance voluntarily offered by its managers, confirmed the choice. The York Society, under the superintendence of their talented vice-president, the Reverend William Vernon Harcourt, and their amiable and indefatigable secretary Mr Phillips, have amply fulfilled the most enlarged expectations, and Oxford has the harder task to perform that York has gone before it.

The people of York have a right to know something of science; for besides men of talent devoted to other pursuits, they have among them an able geologist, nephew and follower of the father of English geology;—and they may claim some praise as promoters of science, for they have erected in honour of it the largest and most splendid building of which any provincial philosophical society can boast. In this building the meetings were held, and its general design—its theatre, its committee rooms, the suite of apartments forming the museum, and the admirable condition, and still more admirable arrangement, of the infant collections they contained, were subjects of general approbation. The collection of organic remains is the most extensive; and it is fitting that Yorkshire, which has proved so rich a storehouse of extinct animal remains, should also take some pains to display the treasures she has so long and so carefully preserved within her bosom; and that, since the time has now come when the secrets of nature may be usefully revealed to inquiring men, she may have the credit, not only of well preserving, but also of wisely and timeously revealing, what she had so long kept hid in prudent concealment.—The minerals are not so numerous, but they are in general good specimens, and hold out the promise of a cabinet which in due time, if past and present zeal continue, will render the York museum not unworthy of the attention of the mineralogist. There is also a respectable collection of birds and insects, and the germ of a scientific library, which

will give a proper direction and a new impulse to the spirit of inquiry, to which the natural history collections may give rise.

The Philosophical Society of York has been only a few years in existence, and its museum has been but a short time opened, and yet its collections are such as to excel those of many old and chartered institutions. Let their labours be continued, and they will benefit not themselves only, but the times in which we live; for it cannot be, that, though borne down with the load of years, even our most aged institutions should not at length bestir themselves, and, catching from memory a spark of their own young enthusiasm, should not again start forward in the race of improvement and amelioration, and assume that place among the promoters of science and the helpers and patrons of scientific men which they have left, and are still leaving to younger and more zealous institutions. The theory of a perfect society for the promotion of science, supposes that the most active and talented men should have most to say in the management of its affairs; but the practice has at the present day been reversed in regard at least to one of these qualities, and the most *inactive* men are often found filling the most important official situations. Men who have long ceased to do any thing for science, who do not even profess to patronize it,—who in a long lifetime may or may not have effected the discovery of a single fact,—and who, jealous of their little fame, cast themselves in the way of such as might outstrip them, have been permitted to retard the workings and impair the efficiency of well constituted societies; but if the spirit of the time do not now so pervade these institutions as to cause them to reform themselves, they will ultimately be forced into it by very shame, at the progress and exertions of the provincial societies.

Nor is it merely from what they might themselves do that activity in the council of a scientific body is desirable, but from what they might induce others to perform. Many who know not what they might do, nor what circumstances place in their power, may do much if properly directed; and who so proper to throw out hints and suggestions to such men, as those who hold offices in a society having solely or mainly in view the promotion of science? Who could better solicit, direct, or employ the patronage of wealthy men, friends of science, and willing to

contribute in means what they are unable to give in actual labour, but such a council, if able, active, and themselves known for their labours? And who so well as such a body could apply to government for aid, either direct or indirect, in the promotion of any scientific object, important either to the honour or to the prosperity of the country? Who can believe for instance, that, had the scientific societies of Edinburgh, been represented by such an active and stirring body, they would have been obliged to this day to pay to government a yearly rent* for the rooms which they occupy? As if the members of any enlightened government might not by such men have been *at length* persuaded, to how much better purpose this money might be employed in encouraging the labours of scientific men. To the committee of the British Association all the active and working men of the day have a right to belong; and though we cannot tell what age may effect in retarding or impairing the efficiency of its operations, the united labours of so many diligent and talented men must have a powerful, and, it is to be hoped, a highly beneficial effect on the science of Great Britain.

The scenes at the meeting of the men of science at York were neither so numerous nor so interesting as I had previously found them at Hamburgh.† Englishmen meet in quiet, and they rarely indulge in those forms of greeting which are common with our continental neighbours,—yet something striking might have been elicited even from English philosophers on their first coming together, had the arrangements of the York committee provided any place of general public rencounter. As it was, introductions or first meetings generally took place in private, and thus their moral and instructive effect was lost. Few things give us a better idea of the character of any individual, and of the general estimation in which he is held, than the manner in which we find him treated by others. Where respect is paid, we involuntarily pay respect also without inquiring why; and where we see one man of known talent deferring to, and tacitly acknowledging by his bearing, the superiority of another, we have obtained an important element towards the forming a true

* The rent, taxes, &c. paid by the Royal Society alone amount to about L. 40 for each sitting.

† See this Journal, No. viii. New Series, p. 189.

opinion of both. There is food for philosophy, therefore, in the *phenomena* of introductions which no thinking man will despise.

The first general meeting took place on the evening of Monday the 26th of September. It was a preparatory meeting, but so showy and glittering that a stranger might have thought men had here met together to turn philosophy into sport, rather than to cultivate "science in earnest." But it was only the first proof, of which we afterwards received many, of the kindly feelings and hospitality of the people of York, which had induced them on this occasion to assemble,—ladies and gentlemen with equal zeal,—to do honour to science, and by giving a cordial and enthusiastic welcome to its cultivators, to testify their high sense of its dignity and importance.

In the course of the evening Mr Phillips delivered a short and popular extempore lecture on some of the more remarkable geological phenomena of Yorkshire, and exhibited some very interesting specimens, chiefly of organic remains, found in different parts of the country. The most remarkable of these remains were the head and horns of a species of deer, probably the red deer, from Thorn Waste on the river Dunn, which were black, and in some places quite flexible like leather. The bogs, therefore, in which they had lain, had not only dissolved out the phosphate of lime, but had also tanned the gelatine of the bones.

On the following morning (Tuesday 27th) was held the first meeting of the lovers of science for the purpose of forming the intended association. It was highly gratifying to those who had taken an interest in getting up and in promoting the objects of the meeting, to find so numerous and respectable a body of men met together. On this first meeting the theatre was well filled, and, before two days had elapsed, the number of those who had enrolled their names and taken out tickets amounted to about 350.

The first proposition made to the meeting was by Dr Brewster, that Lord Milton be requested to take the chair. His Lordship, as President of the Yorkshire Philosophical Society, was the most proper person that could be chosen; and this opinion at that time unanimously expressed was afterwards confirmed when the society became organized, by his being elected

to the office of annual president of the British Association for the advancement of Science.

After returning thanks, his Lordship* proceeded to express his conviction of the utility of such meetings, and of the advantages that would result to science from the establishment of a general scientific association. "When he saw the form which the Yorkshire Philosophical Society had taken, and the establishments it had formed, when he recollected that it had not existed more than eight or ten years, when, (he believed he should not be incorrect in saying) its existence might be traced to those most curious discoveries that were made in their own neighbourhood, (the cave at Kirkdale,) when they might trace the existence of a society which was now so considerable to so inconsiderable a source, he hoped that he was not too sanguine in anticipating that the present meeting might lead to great advantages to science in this country. He hoped that it might be the means of impressing on the government of this country, that the love of science, and the means of promoting science, were not confined to the metropolis; and he also hoped that when government was fully impressed with a just notion of the desire that was entertained to promote science in every part of the empire, they would see clearly the advantage of giving encouragement to such societies, and by every proper means advancing the interests of science. He wished, however, not to be misunderstood. He conceived that the best mode, he might say the most English mode, in which government could promote the advance of science, was by removing all impediments to it, rather than by offering direct encouragement. Not that there were not some branches of science and discovery that must be conducted on so great a scale as to be beyond individual means, and to those branches of research it was perhaps desirable that the attention of the government should be directed. They all knew that there were many grievous obstacles to the advancement of science in the fiscal laws of the country. He would give an instance. He believed in the science of optics there were serious obstacles in consequence of the tax on glass: other persons would be able to give other instances. He thought no doubt

* In a speech reported at length in the York newspapers and in the Leeds Mercury.

could be entertained, that if the example set there, should be followed up in other parts of England, and if those persons who had assembled on the present occasion should give encouragement to similar assemblies in different and well-selected parts of the kingdom, in a very few years this result would be obtained,—that men of science, who were now spread in different places of this empire, would be enabled to meet one another, to compare their ideas, to communicate to each other the advances they might have respectively made in their own spheres, and, by making known to others the wants and deficiencies they had respectively felt, to give such an impulse to science as could not but be highly beneficial. It was not merely that men of science would thus be warmed and encouraged, but it would undoubtedly result from such periodical meetings that each person in the society would be enabled to direct his researches in those modes which would be most advantageous to science in general.”

It was a happy but deserved compliment to the zeal and exertions of the Reverend Mr Vernon Harcourt with which his Lordship concluded :

Si monumentum queritis circumspicite.

His Lordship thought it desirable that science should be patronized, and that the attention of government should be drawn to it ; but he objects to all direct encouragement. On this point he is at issue with many eminent friends and cultivators of the highest departments of science. If England has hitherto done any thing for science, it has been at the expense and by the sacrifices of individuals. The intellect of the country has overmastered the difficulties which beset it, and, despite of the want of encouragement, the little honour and the little emolument they brought, has persevered in scientific researches to the honour and distinction of England. And shall scientific men alone be supported through life by the delights of study and by their own proud consciousness, and shall they obtain none of those more substantial comforts which other men enjoy and value themselves in possessing. If science benefits a country,—if the discoveries of science enhance the prosperity of a country, by increasing its wealth or its resources,

why should those who make the discoveries be the only people to lose by them? They not only gain nothing, but while they lose their time, even the cost of instruments and materials for experimenting are seldom repaid to them. Shall science in the abstract be an honourable pursuit, and yet shall the same diligence which maketh rich in any other profession make a man poor only in this? And now that men are beginning to see how precarious it is to trust the scientific honour of the country to individual and unrewarded exertion—and when, by the loss of our greatest men, we are awakened to the consciousness of how little we did for them when alive, and how feeble were our efforts to secure a race of eminent successors after them—are we now only to remove a few obstacles and alter a few fiscal regulations, as if by taking off a few imposts we were as certain to secure a speedy importation of scientific zeal into the country, as we are of foreign produce into our markets by a similar procedure? Hindrances, indeed, ought to be removed, but direct encouragement ought also to be given,—to be given, however, with prudence, and in the way most likely to produce the greatest good. Such direct encouragement is indeed *un-English*, for England has never so distinguished herself; but it is time her mode of encouraging science were altered. Were the duty taken off glass, experimental trials might be made without the same liability to vexatious interference;—but would the price of optical instruments be in consequence reduced—or would the chemist be materially benefited? No chemist in his single researches need break five pounds worth of glass in a year, and what would be the paltry encouragement he would receive by the remission of the half, nay the whole of that sum? The true friend of science will abolish no tax for the mere sake of lightening the burdens of scientific men, where such abolition is not called for by the general interests of the country. But let him apply a *per centage* of the produce of the tax to the direct encouragement of science, through such channels as men of known scientific eminence may suggest, and then may some good fruits be looked for.

It is said by popular men, who know no more of science than what the titles of patents teach them, and who judge of

the national encouragement of science from the splendid fortunes which a few happy applications of it to the arts have realized, that in this country science is its own reward, and that it needs no other aid than what is given it by a liberal and enlightened public. There are certain facts or discoveries, which, being of immediate application to the wants or luxuries of man, have an immediate commercial value—and for these the discoverer will in this commercial country always meet with a ready demand—and if he can keep his own secret, as Wollaston did, or *prevent his patent from being infringed*—may make it a source of great gain. Yet even to such discoverers the public is neither liberal nor patronizing—they deal with them as with merchants who have goods to sell, and the fruits of their researches are considered only as matters of traffic. And such discoveries as these do not constitute a hundredth part of the results of scientific investigation, and for the other ninety-nine there is in England no encouragement whatever.

How, then, is direct encouragement to be given? To answer this generally would be a difficult task; yet it is easy to see how in certain cases it might be afforded. Let the various boards, and similar establishments to which scientific knowledge is likely to be beneficial, be always filled up with a certain proportion of scientific men. Let discoveries be purchased by government, or let those who make them be otherwise rewarded, not according to the valuation of the discoverer or the caprice of official friends, but according to the judgment of able and competent committees. Where means are wanting to intellectual men let them be supplied. Such men may become the honour of their country, and they should therefore be early distinguished. Had some discerning spirit singled out Dalton in his first youth, and placed him in a position suited to his talents, who can tell what his mind might have achieved;—or had his researches been aided and facilitated in full manhood,—had he been snatched from the drudgery of a laborious occupation by the patronage of a liberal and enlightened people,—what farther discoveries might he not have effected?—Minds of a high and searching order should not be lightly squandered away, but should be religiously set apart to the prosecution of origi-

nal investigations in that tract to which nature most visibly inclines them. It will follow as one of the benefits of the national institution, that in its committees there will be men eminent and leading in every department, through whom the wishes of a great body of the lovers of science can be made known to government, and from whom again government can obtain information on all scientific subjects, and on the best and most advantageous method of promoting them.

After an able address by the Reverend Mr Harcourt, which, at the request of the meeting, is to be printed and circulated among the members of the association, it was moved and agreed to unanimously, that a society be formed to be called the British Association for the Advancement of Science. Other resolutions were then proposed, stating the objects of the society, and the qualifications for admission. The latter point gave rise to a long and protracted discussion, the result of which was, that the matter was referred to a committee, consisting of all persons present who had written and published on any scientific subject. It would have been much better management, and have saved much time, had the regulations to be proposed been previously made generally known, and submitted at once to a committee for revision. People came quite unprepared for the discussion of regulations they had not anticipated, and started objections, and proposed amendments on the spur of the moment, which, had they enjoyed the opportunity of a little forethought, they would either not have brought forward at all, or would have done so in a more regular and digested manner. Some little difficulties, however, were to be anticipated at the outset, and the entire arrangements in the end were so satisfactorily completed, that the small loss of time occasioned by the first day's discussion proved of very little importance.

At 5 P. M. a party of above 100 strangers and members of the Yorkshire Philosophical Society met at dinner in the York Tavern,—Lord Milton in the chair. The dinner was excellent, was enlivened by many speeches expressing zeal for science, and passed off in the most pleasant and cordial manner. At this and the succeeding public dinners, we had new proofs of

the attention and hospitality of the people of York, in the presents of fruit and venison, with which we were every day regaled.

At half-past eight in the evening the assembly again met in the Theatre and Museum. It had been arranged that Mr Abraham of Sheffield should on this evening deliver a lecture on magnetism, which he accordingly did to a very crowded audience. It contained as much important matter as would have made two excellent lectures in these degenerate days, was illustrated by many attractive experiments, and occupied the entire evening. Tea and coffee succeeded about eleven at night.

On future occasions it will be advisable, as is the case in Germany, that there should be neither lectures nor scientific papers read at the evening meetings. It is rather sleepy work in most cases to rise from the dinner-table, where men have been enjoying good cheer, and to sit down forthwith to listen patiently to a scientific lecturer. There are few persons whose vigilance will not at times be overcome by this test. All public scientific business should be dispatched before dinner, and the evenings should be reserved for conversation, for private and particular discussion, and for the cultivation of mutual acquaintance.

On Wednesday the 28th, the committee met at 10 A. M., to amend and complete the regulations of the association. At twelve they reported progress to the general public meeting, which assembled at that hour, after which the proper scientific business of the society was entered upon.

The first paper read was by Dr Brewster, on the crystallographic systems of Mohs, and on the propriety of adding to them a fifth, to be called the composite system, under which might be classed certain crystalline forms, not admissible into any of the four received systems. This paper, being of an abstruse nature, gave rise to no discussion.

The second paper was an able memoir on the philosophical character of Dr Priestley, by Dr Henry of Manchester. In this paper he endeavoured to account for and to justify the hasty and unfinished state in which Dr Priestley published his researches and discoveries. The science of chemistry was then

new,—other men were labouring in the field of discovery with equal ardour,—were occasionally stumbling upon the same facts, and laying claim each to what the other had already observed. Thus, to secure priority, it became absolutely necessary to be hasty in publishing. If this were true in the days of Priestley, how much more so must it be now?

A few remarks from Mr Luke Howard, on the character of Priestley's mind, concluded the business of this sitting.

Instead of dining at the ordinary to-day, the strangers formed themselves into little friendly dinner parties, in which men of like views and pursuits being associated together, could enjoy, along with the comforts of the table, the benefits of agreeable and quiet discussion. After the bustle and formality of the preceding day, an opportunity for more intimate communion was particularly desirable.

Our meeting in the evening was rather thinly attended. The ladies and all the lovers of sweet sounds had deserted us for Dr Camidge's concert, and none but those imbued with a true philosophic spirit found their way to the theatre. To this select audience, Mr Potter of Manchester exhibited his elegant microscope, an improvement on the reflecting microscope of Newton, and his elliptical mirrors, which as an amateur he has brought to great perfection.* The description and exhibition of Dr Brewster's Lithoscope, for distinguishing precious stones by the colours reflected from them under certain circumstances, followed by an explanation, with the aid of diagrams, of the principles on which it was founded, concluded the readings.

Thursday, Sept. 29th. At ten o'clock the committee again met, to prepare additional regulations, to suggest subjects of inquiry which it would be desirable to see taken up by scientific men, and to make various arrangements for the future management of the association.

At twelve o'clock it was announced to the general public meeting, that the association being now constituted, and having commenced its scientific career, it was necessary to its more perfect organization, that an annual president and certain other office-

* See p. 61 of this Number.

bearers should be chosen, and that provision should be made for holding the next annual meeting. It was then proposed at the recommendation of the committee, that Lord Milton be requested to take the chair as president of the association. This was carried by acclamation, after which his Lordship took the chair, and expressed his ardent desire to aid, by every means in his power, the objects of the association. It was then proposed that the Reverend Mr Vernon Harcourt should be named Vice-President, Mr Phillips secretary, and Mr Gray interim treasurer; that Oxford should be the next place of meeting; that Dr Buckland, who had expressed himself as cordially approving of the present association, should be President elect, and Dr Daubeny secretary; and that the meeting at Oxford should take place in June, on a day to be named and announced by the committee at that place. To these it was afterwards added, that Dr Brewster and Professor Whewell of Cambridge should be Vice-Presidents elect, and the whole were unanimously agreed to.

Before entering upon the scientific business, his Lordship rose and expressed his regret, that he was under the necessity of leaving the meeting, and requested that Mr Harcourt might be permitted to take the chair.

The first paper read was by Mr Dalton, a very interesting and minute experimental inquiry into the relations that exist between the weight of food taken and that of the secretions and insensible perspiration. The experiments he had made upon himself about forty years ago, and, by estimating the two former, he endeavoured to draw conclusions as to the general amount of the latter. Mr Dalton must have early commenced his exact inquiries; and it is exceedingly interesting to find him applying the discoveries and determinations of later science to numerical results obtained by himself nearly half a century ago, and eliciting by their aid new and important truths. The paper will appear in a volume of the *Manchester Transactions* now in the press.

The next paper was read by Mr Potter, in which he endeavoured to draw from the results of a set of ingenious experiments on the quantity of light reflected from certain simple

and compound metallic surfaces, what he considered to be a powerful objection to Fresnel's theory of light.

The third paper caused considerable discussion. It was upon the whin-sill of the northern counties, which the author, Mr William Hutton of Newcastle, had explored and examined throughout almost its whole extent. It is found not merely in dikes, but in the form of beds intervening between strata of almost every kind of rock occurring in the extensive district through which it passes. Such has been found to be the case also in other districts in regard to rocks of volcanic origin. Where the stratum is of small extent, as in the case of the Arran pitch-stone in the Island of Lamlash, it is easy to conceive that during a convulsion by which the rocks were upheaved, and the strata separated from each other, a quantity of melted matter from beneath might be injected into the lateral fissure, and on the return of tranquillity maintain its place there in the state of a bed entirely conformable with the other strata. But where the beds are of vast extent, stretching over a space of nearly a hundred miles, and are overlaid by thick and extensive deposits of other rocks,—it is difficult to conceive how an eruption could be powerful enough to cause fissures in the subjacent rocks, by which the fused mass should find a passage,—to upraise all the supercumbent strata, and to inject laterally a melted mass to a distance of many miles, and yet not be able to break through those upper, and probably less consolidated rocks also, so as to discharge the melted matter, as volcanoes now do, over the actual surface of the earth. This point occasioned considerable discussion. Professor Sedgwick considers the whin-sill to have been injected laterally over all the northern district, and therefore to be of a geognostic age later than that of the metalliferous limestone beneath which it lies. Mr Hutton took the opposite view, and exhibiting a section in which it occurred under beds of shale, limestone, and sandstone, all perfectly undisturbed and conformable. He argued, that, had the sill been injected laterally, a great mechanical force must have been exerted upon the upper rocks, of which no traces were to be found. He inferred, therefore, that the sill was older than these rocks; that it had been eject-

ed by volcanoes, then active, and pouring out their lavas over the whole surface of the earth ; and that the now overlying bed had been deposited on the surface of these lavas since the volcanoes became extinct.

Mr Murchison bore testimony to the ability of the paper, while he differed from the author in his conclusions. From the observations he had himself made upon the whin-sill, and from the apparent connection of the whin-dikes of Durham, the great Bolam dikes in particular, with the stratified basalt in question, he had no doubt that it had been injected laterally, and at a late date, not only into the carboniferous limestone series but into later rocks. At the same time the matter was still open to inquiry, and he considered it particularly desirable to trace whether the branches thrown off by the Bolam dike, and all bearing towards the whin-sill, had actually any connection with it.

Mr Phillips very plausibly argued that both parties might be in the right. He considered it probable that the sill had been ejected by an active volcano during the deposition of the metalliferous limestone, and was thus anterior to some beds, and posterior to others,—a position which he supported with his accustomed ingenuity.

The fourth paper was upon Vanadium, in which a short account of the discovery of the metal by Del Rio, by Sefström, and by myself were given, and the mineral from which it is obtained, and several preparations and salts of the new metal were exhibited. The substance of this paper is inserted in the preceding number of this *Journal*. I was enabled to exhibit some exceedingly beautiful crystals of Vanadic acid formed by gradual cooling. They are in long flat prisms, reddish brown, with a shade of purple, transparent, of a high degree of lustre, possessing a refractive power nearly equal to that of the diamond, have regular double refraction, and belong to the prismatic system of Mohs.

The next paper was an able and interesting sketch of the ancient Flora by Mr Witham of Lartington. The results of his researches into the structure of fossil vegetables, and the light they throw on the character of the vegetation of former ages, were clearly and eloquently stated ; and all remained satis-

fied that Mr Witham had done much, and might yet do greatly more, towards the elucidation of this obscure, but to the geologist highly important subject.

A short paper by Dr Henry of Manchester, on the effect of roasting on the copper ores of Anglesea, closed the proceedings of this sitting. The ore, which contains from 5 to 20 per cent. of copper, is roasted, and by that means converted into lumps, which on examination are found to contain from 30 to 50 per cent. of copper. These lumps are picked out, and the metal separated by smelting. A similar observation had been made some years ago by Professor Bredberg of the School of Mines of Fahlun, and was detailed by him at length in a paper in the *Swedish Transactions*. A short abstract of this observation was inserted in this *Journal*, vol. iii. p. 357, to which the attention of the meeting was directed. After some observations by Dr Daubeny and Mr Phillips, the meeting adjourned.

Thus ended the scientific readings and discussions of the second day. All persons were satisfied, most men were delighted with it, and Mr Phillips, with that aptness which distinguishes him, did not fail in the evening meeting to quote the proceedings of this day, as an admirable illustration of the benefits to be derived from the association.

The dinner party to-day at the ordinary was an exceedingly pleasant one. There were present forty or fifty persons, among whom were Lord Morpeth and Sir George Cayley, Sir Thomas Brisbane, Mr Dalton, Dr Daubeny, &c. Mr Vernon Harcourt in the chair. The room was comfortably large for this number, and all the arrangements,—thanks here also to the York committee were excellent.

The assembly in the evening was unusually splendid. The ladies of York seemed anxious to make amends for their neglect of the previous evening, by extending to this night's meeting a double portion of their patronage. The Archbishop also, considering probably that science may be rendered a valuable hand-maid to religion, and that it is never more legitimately employed than when so serving her, attended with his family, and inserted his name in the subscription-book as a member of the association.

The lecture was delivered by the Reverend Mr Scoresby

of Liverpool, and consisted of "an exposition of some of the laws and phenomena of magnetic induction; with an account of a method of applying the magnetic influence to the determination of the thickness of rocks and other solid substances in situations where they are not otherwise measurable." This was an able and very elaborate paper. It is impossible from memory to give any proper outline of such a memoir, or to do justice to its talented author, and this is the less necessary, that it is likely to appear in an early part of the *Philosophical Transactions*.

After the lecture came as usual, tea, coffee, and conversation, and the meeting broke up at a late hour.

On Friday morning (30th) the committee again met at 10 A. M., and proceeded with the business arrangements of the society. At noon the general meeting took place, Mr Harcourt in the chair. The first paper was a continuation of Mr Scoresby's researches, containing the practical results, as to the measuring of rocks, walls, and similar objects, whose thickness it is desirable to know, but impossible to ascertain by ordinary means. This he determines by the deviation of the needle produced by his powerful magnets, which he finds to cause a perceptible and measurable angular deviation at a distance of sixty feet, and through the most solid bodies.

The second paper was by Dr Brewster, on the structure of the crystalline lens in the eyes of fishes. The curious modes of structure developed by Dr Brewster, as existing in the different tribes of fishes, add another to the numberless instances of wise adaptation of means to ends, which the works of nature display in their minutest parts.

Mr Murchison next detailed the very interesting observations of Mr Gilbertson, in regard to the occurrence in large quantities of the shells of existing species in the gravel and salt beds about Preston in Lancashire. Many of the shells were exhibited and recognized as species at present occurring on the coasts of Yorkshire and Lancashire. They are found as far as twenty miles inland, and at a height, if I recollect right, of at least an hundred feet above the present level of the sea. This curious fact, as it deserved, gave rise to considerable discussion, supported with much animation by Mr Murchison, Mr Phillips,

and Mr Greenough. There seems to have been some great general lifting up of the land in that part of the island, and it must have been so recent, that, had Britain been civilized in the days of the early Greeks or Romans, we should almost have expected to find some account of it in existing records.

Dr Daubeny of Oxford followed, with some interesting observations on the phenomena of hot springs. The points chiefly insisted on were, 1. The connection of hot springs with volcanic action, which led him into a short view of the theory of volcanoes; and 2. The occurrence of azote in such springs, and the mode of collecting and detecting it. This he illustrated by one or two simple experiments, showing with what facility the nature of the gases given off by a mineral spring might be made out; and he showed also how, by evaporating a quantity of the water to dryness, the solid contents might be obtained in a dry state, and preserved for analysis at a convenient opportunity.

This paper also gave rise to considerable and animated discussion, in which the leading geologists and some of the chemical men took a share. On the theory of volcanoes, it was observed, that, however simple and philosophical it might be to refer all to one cause, as Dr Daubeny and others do, which, by the aid of certain suppositions may be made to explain all the known phenomena, yet, as similar phenomena on a small scale are produced in our laboratories from many different causes, it may be so also in the great laboratory of nature, in which all recompositions and decompositions are continually going on on the greatest scale.

That azote in the gaseous state occurs often in mineral springs is well known; and Dr Daubeny has added several new examples of it in England; but that it occurs in a combined state has not been so generally made out. In the state of nitric acid it has occasionally been found in combination with potash, lime, and magnesia; and probably, if carefully sought for, might be more frequently met with. But azote has been found, and I am persuaded, if properly pursued, might be very frequently detected in springs in the state of ammonia. Berzelius obtained a large quantity of ammonia from the water of a spring at Ronneby, in the south of Sweden. It is desirable to search for it in all waters, especially such as give off free azote; but

if it do exist in them, it is evident, that, by evaporation to dryness, there is great risk of its being driven off. A very easy mode of detecting its presence would be to acidulate the water after concentration with sulphuric acid, by which the ammonia would be converted into sulphate, and rendered less volatile. Evaporate to dryness by a gentle heat, and add caustic potash, when ammonia, if present, will be evolved and rendered perceptible to the smell.

Among the friends and patrons of the society at York who paid kind and hospitable attention to those whom the love of science had brought to the meeting, the clergy must not be passed over in silence. They had been the zealous promoters of the meeting; had done much towards facilitating the preliminary arrangements; and exerted themselves by their influence and example to secure to the association that respect and general attention which it deserved, and which at York it amply received. To the church, therefore, the British Association is deeply indebted; and convinced, as I am, that true religion and true science ever lead to the same great end, manifesting and exalting the glory and goodness of the great object of our common worship, I trust that the firmer the association is established, and the more influential it becomes, the more willing and the more efficient an ally it will prove in the cause of religion. While in former times science was said to lead to infidelity, because then it was less profoundly studied, or with less zeal for truth, it is one of the happy characters of the science of this day, that it renders men more devout; and it is a pleasing evidence that such is the received opinion, when discerning and educated men—the friends and teachers of religion—of all ranks, step forward not only to patronize science, but to enlist themselves among its cultivators, and to distinguish those who have most successfully advanced it.

I have already adverted to the attendance of the Archbishop at the evening meetings. This day he gave a mark of his cordial approval and good wishes, by sending to the meeting a general invitation to dine at Bishopthorpe. Many of the strangers availed themselves of this opportunity to visit the ancient archiepiscopal palace so kindly thrown open to them; and all returned to the museum in the evening, gratified by the ho-

nour done them personally, and by the conviction that the association was proceeding under the most favourable auspices.

The first short paper this evening was by Mr Potter, on the analogy of the light exhibited by the electric spark in its passage through the Torricellian vacuum to that of the aurora borealis. This light he intended to exhibit, but unfortunately the apparatus had broken on its way to York.

Dr Warwick next exhibited Professor Moll's interesting experiment of forming a large temporary magnet of soft iron by the action of magnetism. Owing to an accidental defect, it did not succeed to the Doctor's satisfaction; but the horse-shoe was rendered sufficiently powerful to sustain nearly a hundred pounds

Dr Daubeny exhibited a little sphere of wire-gauze which, when immersed in water, filled, and when lifted out still retained the water. When shaken the water flowed out immediately from the pores. He explained the phenomenon on the principle of capillary attraction.

Mr Phillips closed the readings of the evening with a popular account of the new volcanic island in the Mediterranean by Mr Osborne. It was translated from the Malta Gazette, and some of the *sublime* parts caused considerable merriment.

Saturday the 31st, was the last of the public days. At ten o'clock the committee resumed their labours, and at twelve the public meeting took place.

The first paper was by Mr Dalton "on the specific gravity of the human body,"—an able and interesting memoir, which will appear in the *Manchester Transactions*. One of the chief points of inquiry was in regard to the mode by which we are enabled to support the great weight of the atmosphere pressing upon the human body, calculated to amount to from fifteen to twenty tons. Mr Dalton supposes all the pores of the body to be filled with air, and that this, with the air in the lungs, actually sustains all the pressure, leaving the solid parts unimpeded to perform their functions. The body in this case is just like an open vessel which, placed in an atmosphere of great density, remains uninjured, but which, if closed, and submitted to a similar pressure, would speedily be crushed together. From known experiments on the density of the human body, from

which it appeared, as we should naturally expect, that some men were lighter and some heavier than water, he took occasion to remark upon the absurdity of the common notion that all men could swim if their fears would permit them. "As well," said Mr Dalton, "might a piece of fir reproach a piece of lignum vitæ for sinking, as a light man reproach a heavy one for not being able to swim." And yet the common notion is not so absurd after all, if it be considered that fear makes a man empty his lungs of a great portion of the air which, were he courageous enough, would keep him afloat.

A long conversation followed the reading of this paper, in the course of which Mr Scoresby communicated some very interesting facts regarding the effects which the pressure of the water produced upon the whale at the great depths to which it often descended when struck by the harpoon. It often went down perpendicularly to the depth of a mile, but always came up exhausted and blowing out blood, showing that the pressure had so acted upon the vessels as to cause them to discharge a portion of their contents into the lungs.

Mr Allan, of Edinburgh, described a large specimen of aqua marine brought to this country by the Ex-Emperor of Brazil; after which, Mr Robison, Secretary to the Royal Society of Edinburgh, explained, by the aid of drawings, some contrivances he has introduced in the construction of his splendid lint-seed oil barometer, to enable him to free its contents from elastic fluids when first filled, and to preserve them from contamination by subsequent absorption from the atmosphere.

Dr Brewster exhibited his alum and rock-salt prisms, so far surpassing, and at so trifling an expence, the finest glass prisms made in England; showing the lines in the spectrum more clearly even than the homogeneous prisms of Fraunhofer's own manufacture. To find a cheap and common material in the hands of a man of genius substituted with manifest advantage for a rare and expensive prism, is one of those happy economical adaptations of common means which we rarely meet with, but the importance of which, when we do meet with them, are comprehended by all.

This led also to an explanation of Dr Brewster's views regarding the heating rays supposed by Herschel to be

most numerous in the dark part of the spectrum, as there he found the temperature highest. This opinion was shown by Seebeck to require considerable modification. By using hollow prisms filled with fluids, he found the maximum of temperature to have a different locality for each substance, so that when a solution of sal-ammoniac was used the greatest heat was in the yellow rays. It is not always, therefore, as Herschel found it, beyond the red rays. But by darkening his prism, Fraunhofer lengthened his spectrum very considerably, so as to prove that there was light for a certain space beyond the limits of the spectrum, as known to Herschel; and by eating out, as Dr Brewster calls it, that is, by using prisms which absorb the most intense light, he has succeeded in further extending even Fraunhofer's spectrum, and showing that light is diffused over all the space in which Herschel recognized his heating rays,—and thus has proved that there are no rays of heat unaccompanied by light, and therefore none which we can pronounce to be heating rays alone.

The subject of colouring matters also was touched upon. Chemists used formerly to talk of colouring matters, and to say that such a substance was coloured by such another. But a coloured by union with a colourless substance sometimes gives a colourless compound, and often one of a different colour from that of the substance in its separate state. The colour, therefore, must be due to a corpuscular arrangement; and where we find that a coloured by union with a colourless body forms a coloured compound, we can legitimately say or infer, not that the one body has imparted its colour to the other, but that the union of the two has taken place in such a way as to cause an arrangement of particles capable of producing the same effect upon light. And further, as change of colour may take place, as it often does, by simple heating, without affecting the optical properties of the substance, we cannot say that colour is owing to *optical structure*, but to a change in the ultimate atomic arrangement only, while we are enabled to infer further that different modes of corpuscular arrangement are consistent with and may produce the same optical structure.

On the close of this discussion, Mr Forbes read his able and

elaborate paper on the horary oscillations of the barometer, which was listened to with great attention; but the nature of the subject prevented any observations from being made upon it.

A letter from Sir James South to Dr Brewster was read, in which he directed the attention of the meeting especially to the satellites of Jupiter. They were generally supposed to disappear when within the disc of the planet, but he had lately observed one of them like a black spot on its surface,—and he wished to know why they were not always so visible.

The business being now closed, the meeting broke up.

The evening assembly was splendid as usual, the rank and fashion of York giving us their countenance to the last. Dr Daubeny opened the meeting by explaining some experiments of the Reverend Mr Taylor, of York, for the purpose of increasing the light without increasing the consumption of gas. These were followed by some ingenious applications of the heat of gas to economical purposes by Mr Robison of Edinburgh, illustrated by a few simple experiments. The Reverend Mr Harcourt then exhibited and explained the principle of a new and simple lamp for giving a good light, at a cheap rate, by the consumption of the inferior qualities of oil. Dr Brewster's admirable memoir on a new analysis of solar light was next read by Mr Phillips, and illustrated by diagrams; at the close of which some discussion took place, chiefly concerning the peculiarity of vision to which Mr Dalton is subject.

A translation of a memoir by Professor Gazeri of Florence, "on a method of rendering visible the traces of erased writing," was then read by Mr Gray. The method consisted chiefly in the application of heat to the paper from which the erasure had been made. It called forth some observations from Drs Daubeny and Brewster, during which the latter pointed out the utility of heat in enabling antiquarians to make out the legend on old coins; and stated, that he had never been more struck than by observing once on an old coin which he had placed on hot iron an inscription, previously invisible, make its appearance, which he easily read in the dark, and found to be "*Benedictum sit nomen Dei.*"

This finished the business of the evening and of the first

meeting of the British Association. Lord Morpeth then rose, and addressed the meeting as follows:—

“Ladies and Gentlemen, an office has been assigned to me, which, although most entirely without any qualification or pretension to fulfil, I nevertheless accept, and will discharge, to the utmost of my ability, with the utmost alacrity. To the character of a man of science I have, unfortunately for myself, no claim whatsoever; but I have the good fortune to be intimately connected with the county, and consequently with the city of York; and I feel that they have both received great benefit and additional credit from the meeting which is now brought to a conclusion. I say this both with reference to the positive instruction we have received upon so many most interesting and important subjects, and also to the circumstance of this town and this edifice, already so much indebted to the zeal, perseverance, and ability of our Vice-President, having been now selected as the birth place of an association, which, I trust, is destined to confer fresh lustre on British science, (applause,) to give a new motive and a new guarantee to the friendly intercourse and continued concord of nations; to make farther inroads into the untravelled realm of discovery, and glean fresh harvests from the unexhausted field of Nature; to promote the comforts and augment the resources of civilized man; and to exalt above and over all the wonder-working hand of Heaven. For it will always come out as surely as from the rusty medal of which we have this moment heard, ‘*Benedictum sit nomen Dei.*’ Observe well, if you wish to appreciate rightly the true value and nobility of science, that while it proposes to itself distinct courses and definite spheres of its own, its general tendencies conduce to peace, and minister to piety. With these views and these hopes, it is natural and it is becoming that there should be mixed feelings of gratitude to those whose efforts have contributed so largely to our future progress. An assembly like that which I have the honour to address, will appreciate far more justly than I can pretend to do, the several papers and productions which have been submitted to our notice; I have no scruple in leaving to your more competent and accurate discrimination, the indications of enlightened and powerful thought which they have exhibited; but I feel sure

that, if you pardon me for this intrusion of myself, the proposition I now make will command, upon this occasion, both the grave assent of science and the soft sanction of beauty. I move that the thanks of this meeting be given to Dr Brewster, and the other authors who have favoured us with their communications.*

This motion was carried by acclamation, after which Mr Murchison rose, and, "on the part of Dr Brewster and his other scientific friends, begged leave to return thanks for the high honour done to the contributors of scientific memoirs, and for the kind assistance and valuable aid which had been received from the residents of York and its neighbourhood, in the promotion of the objects of this meeting. He explained the motives which first induced the original promoters of the meeting to select the city of York for their first assembly. To this city, as the cradle of the association, they should ever look back with gratitude; and whether they met hereafter on the banks of the Isis, the Cam, or the Forth; to this spot, to this beautiful building, they would still fondly revert, and hail with delight the period at which in their gyration they should return to this the point of their first attraction. Mr Murchison, after warmly eulogizing the kind reception and hospitality which the strangers had experienced from the Archbishop, and from all classes of the inhabitants of the city and neighbourhood, concluded, amidst loud applause, with a motion of thanks as follows:—'That the cultivators of science here assembled, do return their most grateful thanks to His Grace the Archbishop of York, the Patron, and to the Officers and Members of the Yorkshire Philosophical Society, for the very liberal manner in which, by the use of their Halls and Museum, and by their obliging and unwearied efforts to provide every accommodation and comfort to the visitors, they so essentially contributed to the success and prosperity of this Association.'

This motion was seconded by Dr Brewster, and warmly supported by Mr Dalton. Mr Vernon Harcourt, who was in the chair, then said, that "it was quite unnecessary, from the feelings which he knew to pervade the breasts of all, both scienti-

* Yorkshire Gazette, October 8th 1831.

fic strangers and residents, to put to the vote of the meeting either of the proposals so eloquently brought forward. In the long period of its existence, the ancient city of York had never greater reason to be proud than of the genius and talent it contained within its walls at that moment, and of the honour it had obtained of being the birth-place of an Association destined (he firmly believed) greatly to enlarge the boundaries of science." After some farther observations, he declared the meeting to be adjourned to Oxford.

This evening was a pleasant one to all parties, and all, I believe, felt regret that the sittings had come to a close.

On Monday the committee held its last meeting, and embodied the latest suggestions into the regulations of the Society.

The following copy of the Circular, drawn up by the Vice-President and Secretary, contains these regulations in their finished state, and presents a view of the nature of the association.

OBJECTS.

The Association contemplates no interference with the ground occupied by other Institutions. Its objects are,—To give a stronger impulse and a more systematic direction to scientific inquiry,—to promote the intercourse of those who cultivate science in different parts of the British Empire, with one another, and with foreign philosophers,—to obtain a more general attention to the objects of science, and a removal of any disadvantages of a public kind which impede its progress.

RULES.

Members.—All persons who have attended the first meeting shall be entitled to become members of the Association, upon subscribing an obligation to conform to its rules.

The fellows and members of chartered societies in the British Empire shall be entitled, in like manner, to become members of the Association.

The office-bearers and members of the councils, or managing committees, of philosophical institutions shall be entitled, in like manner, to become members of the Association.

All members of a philosophical institution recommended by its council or managing committee, shall be entitled, in like manner, to become members of the Association.

Persons not belonging to such institutions, shall be eligible, upon recommendation of the general committee, to become members of the Association.

Subscriptions.—The amount of the annual subscription shall be One pound, to be paid in advance upon admission; and the amount of the composition in lieu thereof, Five pounds.

Subscriptions shall be received by the Treasurer or Secretaries.

Meetings.—The Association shall meet annually, for one week, or longer. The place of each meeting shall be appointed by the general committee at the previous meeting; and the arrangements for it shall be entrusted to the officers of the Association.

General Committee.—The general committee shall sit during the time of the meeting, or longer, to transact the business of the Association. It shall consist of all members present, who have communicated any scientific paper to a philosophical society, which paper has been printed in its transactions or with its concurrence.

Members of philosophical institutions, being members of this Association, who may be sent as deputies to any meeting of the Association, shall be members of the committee for that meeting.

Sub-Committees.—The general committee shall appoint, at each meeting, sub-committees, consisting severally of the members most conversant with the several branches of science, to advise together for the advancement thereof.

The sub-committees shall report what subjects of investigation they would particularly recommend to be prosecuted during the ensuing year, and brought under consideration at the next meeting. They shall engage their own members, or others, to undertake such investigations; and where the object admits of being assisted by the exertions of scientific bodies, they shall state the particulars in which it might be desirable for the general committee to solicit the co-operation of such bodies.

The sub-committees shall procure reports on the state and progress of particular sciences, to be drawn up from time to time by competent persons, for the information of the annual meetings.

Local Committees.—Local committees shall be appointed, where necessary, by the general committee, or by the officers of the Association, to assist in promoting its objects.

Committees shall have the power of adding to their numbers those members of the Association whose assistance they may desire.

Officers.—A president, two vice-presidents, two or more secretaries, and a treasurer, shall be annually appointed by the general committee.

Papers and Communications.—The general committee shall appoint at each meeting a sub-committee, to examine the papers which have been read, and the register of communications; to report what ought to be published, and to recommend the manner of publication. The author of any paper or communication shall be at liberty to reserve his right of property therein.

Accounts.—The accounts of the Association shall be audited annually by auditors appointed by the meeting.

OFFICERS OF THE ASSOCIATION.

President.—Charles William, Viscount Milton, F. R. S. &c. President of the Yorkshire Philosophical Society.

President elect.—Rev. William Buckland, D. D. F. R. S. &c. Professor of Geology and Mineralogy, Oxford.

Vice-President.—Rev. William Vernon Harcourt, F. R. S. &c. Vice-President of the Yorkshire Philosophical Society.

Vice-Presidents elect.—David Brewster, LL. D. F. R. S. L. & E. Corresp. Member of the Institute of France. Rev. William Whewell, F. R. S. &c. Professor of Mineralogy, Cambridge.

Treasurer.—Jona. Gray, Esq. York.

Secretaries.—*York.*—William Gray, Jun. John Phillips, F. G. S. &c. Secretaries of the Yorkshire Philosophical Society.

London.—Rev. J. Yates, F. L. S., G. S. &c.

Edinburgh.—J. Robison, Sec. R. S. E. &c.

Dublin.—.....

Oxford.—Charles Daubeny, M. D. F. R. S. Professor of Chemistry, Oxford. Rev. Baden Powell, A. M., Savilian Professor of Mathematics, Oxford.

LOCAL COMMITTEES.

London.—G. B. Greenough, F. R. S. Vice-President of the Geological Society. R. I. Murchison, F. R. S. President of the Geological Society. Rev. James Yates, F. L. S. &c.

Edinburgh.—James D. Forbes, F. R. S. E. J. F. W. Johnston, A. M. John Robison, Sec. R. S. E. &c.

Dublin.—W. R. Hamilton, F. R. S. &c. Astronomer Royal of Ireland. Rev. B. Lloyd, D. D. Provost of Trinity College, Dublin.

India.—George Swinton, Esq. Chief Secretary to the Government in India, has been requested to form a Committee at Calcutta, with the aid of Major Benson, J. Calder, Esq. Dr Christie, J. Herbert, Esq. J. A. Prinsep, Esq. and Sir Edward Ryan,

SUB-COMMITTEES.

Mathematical and Physical Science—David Brewster, LL. D. F. R. S. L. & E. &c. Sir Thomas Brisbane, K. C. B. F. R. S. L. & E., Corresp. Member of the Institute of France. James D. Forbes, F. R. S. E. W. R. Hamilton, F. R. S. &c. Rev. William Pearson, LL. D. F. R. S. Vice-President of the Astronomical Society. Rev. William Scoresby, F. R. S. L. & E. Corresp. Member of the Institute of France. Rev. W. Whewell, F. R. S. &c.

Chemistry.—Rev. John Cumming, F. R. S. Professor of Chemistry, Cambridge. John Dalton, F. R. S., President of the Literary and Philosophical Society at Manchester, Corresp. Member of the Institute of France. Charles Daubeny, M. D. F. R. S. &c. Rev. W. V. Harcourt, F. R. S., &c. J. F. W. Johnston, A. M. William West, Secretary of the Leeds Philosophical Society.

Mineralogy.—Thomas Allan, F. R. S. L. & E. Robert Allan, F. G. S. &c. David Brewster, LL. D., F. R. S. &c. J. F. W. Johnston, A. M. Rev. W. Whewell, F. R. S. &c.

Geology and Geography.—Rev. William Buckland, D. D. F. R. S. &c. Rev. W. D. Conybeare, F. R. S. &c. Vice-President of the Geological Society, Corresp. Member of the Institute of France. Sir Philip Grey Egerton, Bart. F. R. S., G. S. &c. James D. Forbes, F. R. S. E. F. G. S., G. B. Greenough, F. R. S. &c. William Hutton, F. G. S. &c. R. I. Murchison, F. R. S. &c. John Phillips, F. G. S. &c. Rev. Adam Sedgwick, F. R. S., G. S. &c. Woodwardian Professor, Cambridge. William Smith, Author of the Geological Map of England. Henry Witham, F. G. S. &c. Rev. James Yates, F. L. S., G. S. &c.

Zoology and Botany.—Charles Daubeny, M. D. F. R. S. &c. Rev. J. S. Henslow, F. L. S. G. S. Professor of Botany, Cambridge. J. C. Prichard, M. D. F. R. S.

Mechanical Arts.—J. H. Abraham, F. L. S. &c. John Robison, Sec. R. S. E. &c. Benjamin Rotch, F. S. A. &c.

At the request of the Association, Professor Airy has undertaken to prepare for the next meeting a report of the state and progress of Astronomy; Dr Brewster a similar report on Optics; Professor Whewell, on Mineralogy; J. F. W. Johnston, Esq. on Chemistry; and J. D. Forbes, Esq. on Meteorology.

By direction of the General Committee, a full report of the proceedings of the General Meeting at York, including a statement of the scientific subjects proposed for inquiry, will be prepared for

publication by the officers of the Association, and distributed *gratis* to every member.

The next Meeting of the Association is appointed to be held at Oxford, in the month of June 1832.

Such is an outline of the formation, nature, and first proceedings of the British Association for the promotion of science. The time is favourable for the formation of such a national institution. For if science in England be on the decline, as some maintain, what more likely to call forth new efforts, by which it may be restored, than the youthful exertions of a great scientific body? If it be not on the decline, then the founders of the British Association have only adopted the wisest and most likely means to maintain and increase the reputation of the country; and, by bringing forward the genius and zeal of those devoted to philosophy, to silence the outcry, and disprove the assertions of those who maintain science to be rapidly on the wane. In either view, then, the establishment of the society must be an unmixed good; and it ought, therefore, to meet with the cordial support both of those who assert, and of those who deny, the existence of a decline. Here is a neutral ground on which both parties may meet and conjoin their most strenuous exertions,—the one to maintain the present, and the other to restore the past, scientific eminence of British philosophers. The association having but one grand object in view, the promotion of science through the combined exertions of men devoted to different branches of the same great study,—will pursue that end by the employment of those means which the general opinion of the most competent judges shall decide upon as the most likely to effect the greatest and most permanent good. Minds are already actively engaged and hands set busily to work; and when a few years shall have given time and opportunity for employing and giving efficacy to the various methods of improving science which it has in view, we may hope to find each succeeding anniversary more fruitful in new and important results of scientific labour.

PORTOBELLO,
25th November 1831.







