

which both parties appear to gain. This is the very base line from which the Church of Rome has conducted its operations — this is the very essence of the condition of mind out of which the whole system of Romanism, in its worst features, was but a natural and inevitable growth. It is impossible that a reformed faith should be maintained in its most vital principles under the combined influences thus brought to bear both upon the priest and the people. . . . May the Church of England be saved from the consequences which that connexion (of the Romish doctrines with the ecclesiastical principles sanctioned in the Bishop of Oxford's Protest) threatens — by its nature and consequences being seen and understood *in time*?

We cannot conclude this Article without expressing our cordial respect for the earnestness and depth of conviction, and our high admiration for the ability and sustained energy, with which the Duke of Argyll carries out the advocacy of Protestant principles. The Pamphlet, whose title we have prefixed to this paper, is as remarkable for the mental power it displays as for the soundness of its views and its insight into religious truth: exhibiting a most refreshing contrast with the other, with which we have associated it. By such weapons alone can the progress of Popery be repelled: and it must cheer all to whom the cause of Scriptural religion, and of moral and spiritual independence is dear, to find themselves so efficiently supported in its defence by one who combines great intellectual vigour with a warm faith in Protestant principles, and a manly fearlessness in avowing them.

ART. IX. — *Official Catalogue of the Great Exhibition of the Works of Industry of all Nations, 1851.* By Authority of the Royal Commission. Fourth corrected and improved edition, 15th September, 1851. London: Spicer Brothers, Wholesale Stationers; W. Clowes & Sons, Printers; Contractors to the Royal Commission. Price 1s. in the Building, Hyde Park, or 1s. 3d. at the City Office, 29, New Bridge Street, Blackfriars.

THIS volume may be said to bring down the history of Industrial Science from a period indefinitely remote to the very eve of its own publication: its teachings, like those of Biography, are by examples; it addresses itself to all our natural and artificial wants. Would you know where the richest ores, the costliest jewels, the largest diamonds or the rarest gems are to be sought; where the finest flax, wool, cotton — where the

most useful inventions of every kind—the delicate balance that turns at the $\frac{1}{1000}$ th of a grain, and the huge cross-beam that plays with the Britannia Tube are to be found—you must consult its pages. You will there learn where the choicest specimens of all and each of these—the master productions of nature and intellect—were assembled on a recent day,—where produced,—where fashioned, and by whom. With the impending dispersion of the collection which it chronicles, its curt descriptions,—though they assume somewhat of the elegiac character of the epitaph,—lose little of their intrinsic value. The bygone activity of the collective laboratories, libraries, and workshops of the world seem here transmuted into the pages of one small quarto volume.

Quid juvat innumeris impleri scriinia libris;
Unus pro cunctis—*parvulus* esse potest.

The form of its publication is in character with a range of subject so discursive. Published simultaneously in two places—at differing prices, by two unhomogeneous and abnormal publishers,—it is issued ‘by authority,’ and furnished by ‘compact.’ A very *Ornithorhynchus paradoxus* of literature, combining the body of an Encyclopædia with the feet of the most ubiquitous of guides. Its earlier editions were consulted with the same feeling of despondency with which one is wont to search the rubrics of that kindred sphinx of railway locomotion—Bradshaw—and in general with the like results.

Into the causes of this inceptive ambiguity, it is now needless to enter. The present edition is in a great measure free from the peculiarities which marked those that preceded it. When, however, Dutch contributors promise ‘iron fire-offices,’ that eventually prove to be fire-proof safes,—French chemists send mint, ‘crystallised and peppered,’ or ‘cherry-cake’ which by a mistake of *cerise* for *ceruse*, turns out to be white lead, or our American neighbours promise a ‘horse-power’ or ‘power-loom ‘lathe’—it is not easy for an editor to be at once complying and intelligible. Catalogues are seldom models of accuracy. The world has been amused before now with finding a mathematical work, ‘*De Calculo*,’ and ‘*Burton’s Anatomy of Melancholy*,’ ranged under the head of ‘*Medical*.’ And indeed, as in the opinion of Barante, there was nothing about Madame de Genlis natural—except her children,—so there seems to be nothing half so natural about the volume before us—as its blunders. Few, however, who have enjoyed the privilege of consulting the original manuscripts, could have felt surprise, had the failure been even still more glaring. We are all aware of the difficulties of correct defini-

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dition. And it was little probable that anticipatory descriptions of probable achievements should not partake largely of a speculative character. The collective idiosyncrasies of eighteen thousand individuals of every class and nation, will always need indulgence. But could access be still had to the original documents, we feel perfectly assured that no body of evidence on the existing state of education among the producing classes — not only of this country, but throughout the world — could be obtained, more curious in itself or more characteristic of their mental habitudes, than that supplied by the original 'applications for space,' forwarded by the candidate exhibitors.

The statistics of this volume throw light upon the producing capabilities of our great printing establishments. From information supplied by the contractors, it would seem, that although the first complete impressions were only attainable at ten o'clock on the night preceding the 1st of May, yet 10,000 copies properly stitched and bound were duly delivered at the building in Hyde Park on the following morning. The two copies presented to Her Majesty and the Prince on that occasion had been furnished with their rich trappings of morocco and gold within six hours. The sale of this book, equal in quantity of matter to four ordinary octavo volumes, and published at less than the price of one, has been proportionately large. Upwards of 250,000 copies, about one-sixth of the estimated number of printed volumes that issued from the printing press within the three first centuries after the discovery of the Art of Printing, have been sold. The quantity of paper thus consumed amounted to one hundred and five tons, and the duty paid thereon to the sum of one thousand four hundred and sixty pounds; fifty-two thousand pounds weight of metal are employed in the type, which is kept constantly 'set up,' in order to make all needful alterations. These figures are so large, that we find it difficult to discover any middle term to bring the results they indicate home to our minds. But it may perhaps assist the imagination to reflect that if from any reason, or, indeed, many reasons, the whole of the earlier editions had been consigned in one vertical column to the bosom of the Pacific Ocean, the depth of the latter being generally estimated at 6000 feet, the present improved and correct edition would still form a lonely peak rising to the height of Chimborazo or Cotopaxi, exactly 18,000 feet above the level or the censure of the ordinary inhabitants of this earth.

But with these facts before our eyes, and recollecting that the average number of volumes in ten of the largest

libraries of the world* exceeds but by one half the volumes thus pushed into circulation, we cannot feel much surprise that this book should, like Aaron's rod, have swallowed up the whole literary activity of the last twelve months, and that the ordinary book trade of the country should have been almost altogether suspended. Nor should it be forgotten that much of the knowledge and information—forming the staple of the book trade in ordinary times—has been forced into new and unaccustomed channels by the necessity for its rapid dissemination within the limited period of the illustrations remaining accessible. In almost all of our leading political journals, the new facts of science and art, dressed up with all the attractiveness of news, were related in a form that admitted of easy modification in their statement, and discussion in their bearing. That this lull is but the prelude to animated gales, we feel confident. The past few months have been a period of patient suspense or critical examination. We have had the things themselves before us; a knowledge of their qualities must precede any theoretic analysis.

It is also a most important fact, which seems to have been little regarded, that the leading scientific minds of Europe have been hitherto in a measure bound to silence and secrecy, from being included in the lists of the juries. But let this seal be once removed—let the critical Reports of thirty sections, and at least one hundred and twenty sub-sections—giving the history of what has been, and is, and guesses at what ought to be and will be in every department of knowledge—and we have little doubt that a goodly array of commentaries, theories, systems in the old established form of full developed tomes,—besides all the lighter skirmishing of pamphlets,—will soon make their appearance. It is scarcely too much to predict that for every three lines in this Catalogue (the average length of a description) we shall soon see at least one or two works issue from the press, either questioning or discussing the merits there claimed, or the abstract principles involved in their statement. The wrongs, hardships, and injustice which have been hitherto tamely endured, by all whose contributions have been placed by the jurors in any other than the highest category of merit, will find a vent when these violations of all truth and reason become known.

That in the production of the present volume the contractors performed all their stipulated duties with the most praiseworthy

* Number of Volumes in 'Bibliothèque du Roi,' at Paris, 650,000; Munich, 500,000; Copenhagen, 400,000; St. Petersburg, 400,000; Berlin, 320,000; Vienna, 300,000; British Museum, 270,000; Dresden, 250,000; Milan, 200,000; Göttingen, 200,000; Bodleian, 160,000; Trinity College, Dublin, 100,000.

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exactitude can, we think, be hardly questioned; we would even go the length of admitting, that they have felt something of the dignity and importance of the occasion, and acted with spirit and liberality beyond perhaps what the pecuniary results justify; but we are not quite sure that the system of contract can be applied with any thing like safety, and except under the most rigidly controlling influences, to even this class of literature. This species of delegation has its advantages, and in the embarrassed state of the Exchequer of the Royal Commission at the period when the contract was entered into, such a step was no doubt both excusable and proper; but the extension of the system would have its dangers. Every step we advance in the secularisation of the clerky office opens an inlet to influences dangerous to the interests of science. There is a certain degree of sacerdotal sentiment needed in the bibliopolist function. In the case of America we see books treated as mere merchandise; and the consequence is, that, though she has sent us whole quires of her newspapers, her booksellers have not ventured to send a single sample of their mutilated manufacture.

Against the system of contract generally, or its universal application to the other departments of the enterprise, we have nothing to urge. 'It has ever been found,' says Edmund Burke, 'the best way to do all things which are great in the total amount, and minute in the component parts, by a general contract. By a general contract with a person *in his own trade*, 'you are sure you shall not suffer by want of skill.' With respect to the monopoly of provision for the wants of the body, as compared with that for those of the mind, it is, perhaps, curious to observe, that their sale should both have produced so nearly the same amount. The original sum of 3,200*l.* paid for the privilege to print the Catalogue added to the Royalty of two pence on each copy, would amount on 250,000 copies sold to 5,200*l.* The sale of the Refreshment monopoly produced 5,500*l.*

Passing for the present from the Catalogue to that of which it supplies the argument, it may be, perhaps, convenient if we here at once state the point of view from which it is our intention to treat the present subject. It may be conveniently divided into three distinct branches:—the project itself; the manner of its realisation; its immediate effects and its probable influences.

It is unnecessary for us to dwell at any length upon the objects or the views entertained by the illustrious personage with whom, by common consent, the present Exposition has in a great degree originated. These have been already suffi-

ciently explained in language to which no words of ours can lend additional grace or perspicuity. No great merit of originality attaches to the design; the only novelty consists in expanding an idea, often before partially realised, to a larger generalisation; the only praise in the unwavering fortitude with which, in the face of no ordinary difficulties, the original design was successfully worked out. And yet there is sometimes as complete a change produced by the simple addition of a few new sides to a project, as in the transition of the same carbon from the rhomboid of the dull graphite to the octohedron of the diamond,—from the brittle substance of the lead-pencil with which we trace the first dim outlines of our undeveloped conceptions to the adamant of the brilliant with which we beautify and elucidate light itself. To seize the living scroll of human progress, inscribed with every successive conquest of man's intellect, filled with each discovery in the constructive arts, embellished with each plastic grace of figured surface or of moulded form, and unroll this before the eyes of men, the whole stream of history furnishing its contingent,—placing Archimedes, Arkwright, Davy, Jacquard, Watt, and Stephenson side by side,—leaving the instructive lesson to be learned that always lies in the knowledge and example of great things done;—this is, indeed, no mean design, no infelicitous conception. It is only by such a cosmical comparison of the known agencies of science and art that we can gradually rise to a knowledge of the varied gifts and powers of Nature, or our own control over them: hereby alone can we hope with Faust,

. to see the secret rings,
Whose grasp the universe engirds;
May know the force that works in things, —
Not the mere sound that breathes in words.'

As a nation, we cannot claim the distinction of having originated this great lever of industrial progress; but we have at least given to the world the two philosophers, 'Bacon' and 'Newton,' who first lent direction and force to the stream of industrial science; we have been the first, also, to give the widest possible base to that watch-tower of international progress, which seeks the promotion of the physical well-being of man, and the extinction of the meaner jealousies of commerce.

Such exhibitions have for the last half century been growing into popularity, and may now be said to have assumed a place by the side of the congresses of diplomacy, the synods of the Church, and the manœuvres and sham fights of our armies. It is perhaps more remarkable that Europe should be indebted to France for the first suggestion of the idea, than that the first

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essay of the inventors in 1797 — and the last in 1849 — should have been each totally or in part frustrated by the political turmoil of a revolution. In the other countries of Europe the census of domestic industrial power, and the census of population, have become formal government duties and an integral part of their administrative system, — prescribed with the same distinctness and carried out with the same regularity.

From the following extracts of a Circular * issued by the present French Minister of Agriculture and Commerce, it will be seen that a plan somewhat similar to the present was broached by him previous to the last Paris Exposition in 1849.

‘ At a time (said M. Buffet) when my colleagues in office and myself are busily engaged in doing all we can to give the Exhibition, which opens on the 1st of June next, a character of public utility, it has occurred to me that it would be interesting to the country in general to be made acquainted with the degree of advancement towards perfection attained by our neighbours in those manufactures in which we so often come in competition in Foreign Markets.

‘ You will, therefore, first give your opinion on the abstract principle of exhibiting the productions of other countries; and, should you consider the experiment ought to be made, to enumerate to me officially the articles you consider would be most conducive to our interest when displayed in the ensuing Exhibition.’ The opinion given seems to have been unfavourable and the design abandoned.

In the history of our own extended scheme we recognise two distinct epochs; its early conduct in connexion with the Society of Arts, and its subsequent elaboration and completion under the powers of a Royal Commission; in both cases under the same president — the Prince Consort.

The early infancy of the scheme, whilst still under the fostering care of the Society of Arts, embraces the period from the year 1848, when it seems to have been first conceived, down to the 3rd of January, 1850, the date of the issue of the Royal Commission. The progress made in that interval was not inconsiderable, though many of the steps then taken were subsequently retraced. This portion of our narrative may be dismissed in a few words, and would perhaps hardly deserve even this passing notice, were it not that in one point — the character of the stimulant to competition — its influence is still felt. The Society had resolved on moving the world. It had, however,

* Report on the Eleventh French Exposition by M. D. Wyatt. London: 1849.

something more needful to seek than the mere *ποῦ στῶ*. It must find its lever. This world-compelling power it hoped to discover in the distribution of large pecuniary prizes, amounting in the aggregate to 20,000*l*.

For the attainment of its end it relied on the joint influence of money and enthusiasm. In obtaining the command of the former it seems to have been more fortunate than in awakening the latter. In a country like this any scheme of magnitude rarely fails of commanding the needful capital for its inception, though it not unfrequently languishes from subsequent apathy, or the jarring of conflicting interests or political jealousies. After casting about for some fitting instrument, the Society concluded a provisional agreement with an enterprising capitalist, who, in consideration of the right to two-thirds of the surplus profits, consented to advance the needful sum of 20,000*l*, and also to remove all pecuniary risk from the shoulders of the Society. It is impossible to deny that this willingness on the part of a private individual to undertake the risk, as well as his subsequent advances to meet the first expenses of the design, gave a consistence and commercial solidity to the project which well entitled him to the sum subsequently awarded on the cancelling of his agreement.

With the issue of the Royal Commission on the 3rd of January, 1850, the whole scheme assumed a totally different complexion. Few, if any, of the States of Europe would, we may hazard the prediction, have either contributed directly, or undertaken the expense and management of the transmission of the contributions of their subjects, had the organ of international communication been uninvested with the formal dignity of a State recognition. The control of the enterprise now passed, at least formally, into new hands, and a partial reorganisation of the governing body became necessary. It is a circumstance pregnant with significance far beyond any importance which may attach to the exposition of our industrial rivalries, that the list of Royal Commissioners actively engaged in the every day labour of the scheme, included the men of all parties, the heads of all factions, the Cæsars, Catos, and Ciceros of the State. We should perhaps be less inclined to appreciate the significance of this circumstance, had we not been painfully impressed by the very dissimilar code of public action visible amongst our French neighbours. The recent cosmopolite fêtes at Paris were even less marked by the hospitality of the donors, or *brusquerie* of the military, than in the total void occasioned by the absence of every distinguished leader unattached to the dominant party. Neither at the Hôtel de Ville, nor at any of the banquets given

by the functionaries, was it possible to recognise the face or name of any other than a political partisan of the existing Government. Neither M. Thiers, nor M. Mole, nor M. Guizot, occupied a place at the board round which the amateur Mandarin Hsing and the Russian and American Commissioners sat. This circumstance becomes the more striking when we recollect that the presiding Minister of Commerce, M. Buffet, was the same who, on the occasion of the last French Exposition, had endeavoured, as before stated, but in vain, to induce his countrymen to assent to a widening of the basis of their Exposition, so as to admit of other than domestic competition.

The Royal Commissioners, whilst reserving to themselves the right of deciding on all points of principle arising out of the complicated questions constantly recurring, delegated to the Executive Committee, the task of working out the details and discharging all the active duties of the administration. In this distribution of functions, and the acquisition of such an executive body, on whom, after all, the due realisation of every scheme must mainly depend, there seems to have been an amount of good fortune and felicitous arrangement as unusual in the constitution of public bodies, as it is in keeping with the marvellous prosperity which has hitherto, beyond all precedent, waited on this undertaking.

We think we shall be strictly within the limits of historic truth, if we assert that at the date of their installation, 3rd of January, 1851, the prospects of the new-born corporation were far from dazzling. It is impossible to deny that there existed considerable zeal, and even much lively sympathy, in many quarters. Sixty different places had been visited by a deputation, dispatched by the President of the Society of Arts, some time previously. Local committees had been here and there formed, and 4200 influential persons had, as we are informed, enrolled themselves as promoters of the scheme. But, unhappily for the Royal Commission, the zeal of their supporters evinced itself pretty much in the same way as that of the Irish Poor-Law Guardians for the chief Board, in the propounding of the most enigmatical questions; and the sympathy of friends in tedious demonstrations of the futility, absurdity, and impracticability of the scheme. The design of the Royal Commission to organise local committees in every town, was not seconded by any great local enthusiasm. The chief difficulty, it would appear from the Report of the first person dispatched upon this mission, 'is to find anybody that will listen to you at all on the subject.' One of the first towns canvassed, Rochdale, refused its co-operation in consequence 'of the recent defalcations of the

'savings' bank of that town, and the consequent depression 'of spirits of the inhabitants.' From Cheltenham came grave doubts 'whether, as a fashionable watering place, it could be regarded as within the objects of the Royal Commission.' Hereford desires to be satisfied on abstract obligations, and, 'whether it is indispensably necessary that a town having a local committee should at least exhibit some one production.' Manchester would co-operate, provided satisfactory answers were returned to twenty-three different questions: 'Would the Royal Commission say how it intended to provide against two samples of the same or similar articles being sent in for exhibition? Where various towns have exactly the same kind of machines, is it intended to admit the same from different towns, or only one? if so, which? How many local committees are deemed desirable? What are the powers of the local commissioners? Are they to be delegate representatives of the local committees, or to have independent powers? Will local commissioners be allowed to be exhibitors?' Other towns had other scruples: 'Would a model of the docks and shipping of Liverpool be in accordance with the objects intended by the Exhibition. What is the total amount of subscriptions required in the judgment of the Commissioners? Is the subscription to be an absolute donation, or in the nature of a guarantee in case of deficiency? Will any expenses devolve upon local committees or local commissioners? if so, how are they to be met? Who was to pay for carriage? who for superintendence? who for insurance against fire, water, theft, and accident?'

It was not right nor reasonable to expect money, but anything else was at the service of the Commission. The local committees would, in short, aid them in the investigation of their theorems, assist them in the solution of their problems, would assent to all their axioms, but could not listen for a moment on the subject of postulates.

But if the prospect at home was cheerless and discouraging, there was surely little to excite hope or kindle enthusiasm in the aspect of affairs abroad. The same public journal that contained some moving homily addressed to the friends of brotherly unity on the blessings of peace, generally contained a no less exciting summons from half a dozen commanders to arms. The Commission invited the governments of the continent to mingle in idyllic brotherhood, at a time when both the governed and governors were engaged in a more rancorous contest from purely national motives than perhaps at any previous period. The very first dispatch of our Minister at Dresden, acknowledging

the receipt of the communications of the Commission, announced the fact 'of Prussia having refused to take any part in the then forthcoming Exhibition in Leipsic, as not desiring to have anything to do with a government, like the Saxon, which had treated her so badly.'

On the whole, the period of its first promulgation was one of general political convulsion, to which the annals of history happily offer but few parallels. From the Weser to the Danube, from the Belt to the Caspian, preparations for war were everywhere making. Denmark, Holstein, Germany, Prussia, Austria, Hungary, and Italy, bristled with armed men. The half extinct crater of Schleswig Holstein still sent up from time to time dense volumes of smoke. And hardly had the vivid glare of actual war passed away, when the flames burst suddenly forth from out the miniature volcano of deeply wronged Hessen-Cassel, scattering its burning embers throughout the length and breadth of the German Fatherland. Prussia had scarcely dismissed its soldiers, tired with the harassing duties of the internecine campaigns of Dresden and Rastadt, to their homes, when the voice of Radowitz, the soldier- orator, issued the hasty summons for all Prussians above the age of eighteen years, to fall into rank and prepare to renew the old hereditary struggles of the Houses of Hohenzollern and Hapsburg. Austria, still reeling beneath the weight of repeated shocks, seemed to have permanently taken to its tents; its capital and provincial cities appeared no longer safe; and, indeed, to this day are in a state of siege. France, after running through every stage of political excitement, and testing every form of government, from monarchy to republicanism, dictatorship, anarchy, Napoleonism, seemed scared and enfeebled to inaction. All the seats of European commerce had been transformed into camps of armed men. We had ourselves, indeed, escaped actual embroilment; but hopes of alliance blighted, or the marked discountenance of ungrateful theories, had not failed to produce strong sentiments of estrangement amongst even our oldest allies. Then came the painful incident with the Austrian Field-Marshal, as if to mock the hope of a peaceful meeting of such jarring elements, which had lived in fierce conflict for so long a time.

We have yet to allude to an event that deepened the general gloom of the period, and deprived the Royal Commission of one of its most strenuous and efficient supporters. From the minutes of the proceedings antecedent to the royal patent, we learn that 'His Royal Highness stated he had recently communicated his views regarding the formation of a great collection of works of industry and art in London in 1851, for the pur-

‘pose of exhibition and of competition and encouragement, to some of the leading statesmen, and, amongst them, to Sir Robert Peel. . . . His Royal Highness judged, as the result of these communications, that the importance of this subject was fully appreciated.’ The full import of these words was never thoroughly felt until the occurrence of that calamity which deprived the Royal Commission of the statesman, whose support abroad, even more than at home, was a tower of strength. It is not possible to over-estimate the value of the aid rendered, in liberal act and ready counsel, by the most worldly-wise of British statesmen to the labours of the Royal Commission. The minutes of the weekly meetings record hardly one at which the name of Sir Robert Peel is wanting — down to the very day of the fatal catastrophe on the 29th of June. He it was, we believe, who first suggested that the gold and silver medals, which had succeeded in supplanting the large money-prizes, should be abandoned, and bronze substituted. In the sitting of March 23. 1850, we find the following minute: ‘The draft of a statement to be issued to the public was proposed by Sir R. Peel, and approved.’ The introductory passage of this statement will be read, perhaps, with interest, as not uncharacteristic of the pen from which it flowed: — ‘Her Majesty’s Commissioners for promoting the Exhibition of 1851 have had under their consideration the subject of the prizes to be awarded to exhibitors, and have resolved to take immediate steps for having medals struck of various sizes and of different designs, it being their opinion that this is the form in which it will, generally speaking, be most desirable that the rewards should be distributed. They will endeavour to secure the assistance of the most eminent artists of all countries in producing these medals, which will, they hope, be valuable as works of art of the highest class, besides serving as records of distinction in connexion with the Exhibition. They have decided to select bronze for the material in which the medals are to be executed, considering that metal to be better calculated than any other for the developement of superior skill and ingenuity in the medallie art, and at the same time most likely to constitute a lasting memorial of the Exhibition.’ The foregoing is no bad example of the unrivalled skill of the writer in the use of the Optative mood—and the ability to fulfil the recent direction on a Florentine packing-case in Hyde Park, — ‘This case to be posed with softness.’ Such was the transition in the character of the prizes from large money rewards to simple bronze medals.

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which the designs of the Royal Commissioners had to contend at the very outset, we have next to direct attention to the nature of the machinery by which these and subsequent influences of a still more disheartening character were successfully combated, and eventually overcome.

Whilst the Royal Commissioners, under the presidency of Prince Albert, held their weekly meetings, in the Palace of Westminster, the Executive Committee, first under the presidency of Mr. Stephenson and subsequently of Lieut.-Colonel Reid, sat daily at their offices in Palace Yard; both bodies communicating through a third, the Finance Committee, under the presidency of Lord Granville. Several committees of sections, consisting of the leading men in the departments of agriculture, manufactures, and the arts, were forthwith nominated, whose function it was to facilitate the subdivision of their respective departments into proper classes, and to act generally as consultative bodies on all matters of a technical character within their respective spheres. If we add to the foregoing two Special Commissioners, Dr. Lyon Playfair and Lieut.-Col. Lloyd, who acted as intermediaries between the Royal Commission and the Local Committees, we take in at a glance the whole official organisation. Nothing can be more simple than the business routine of these several bodies; and nothing can better demonstrate the power of a sound organisation to dispose with accuracy and dispatch of an otherwise overwhelming amount of the most complicated business. The letters were in the first instance opened by the Executive Committee, their contents noted, and the answers at once written upon their faces; these answers were then copied, forwarded, and an entry of the substance of both the letter and the answer made in the letter-book. No formal archives were kept. It may, perhaps, give some idea of the amount of business thus dispatched to state that the number of letters so received and answered by the Executive Committee amounted, on the 15th of September, to 39,000. Letters involving questions beyond the competence of the Executive Committee were brought before the Royal Commissioners, and replied to by that body. In all matters involving an expenditure of money, a monthly estimate was prepared by a financial officer, whose calculations of receipts and disbursements were duly controlled by the Committee of Finance. The most rigid economy was enforced in every department. The slender prospects of the Commissioners' exchequer seem to have deterred the chairman and the majority of even the Executive Committee from accepting of any salary for their laborious exertions. It almost might be supposed, that the members of this body

had taken vows of poverty, which the sparing contributions of their supporters well enabled them to keep inviolate.

The sources of revenue from whence all expenses were defrayed consisted in the subscriptions of the local committees and of the affluent supporters of the scheme. These funds came in at all times tardily, but at the outset with especial meagreness. They amounted in the aggregate to 67,000*l.* including the royal donation of 1,000*l.* and that of the prince consort of 500*l.* In addition to their other cares, the constant demands on a failing exchequer, to meet the large and growing building and other charges, were a source of painful uneasiness up to the very opening of the Exhibition, and until the large subsequent receipts relieved all anxiety on this score. So inadequate were the early resources to meet the demands upon them, that it was found necessary for certain members of the Commission to take the larger share of the pecuniary responsibility upon themselves, and form a guarantee fund to meet the exigencies of the scheme.

Having concluded this brief outline of the constitution of the governing body, we now come to the building itself: and first as to its site. The Royal Commission had, from the very outset, selected Hyde Park as the most fitting locality. Their choice lay between the place eventually decided on, and a locality not far distant, more to the north-east, which has since received all the suffrages of Mr. Babbage.* It seemed decreed that their predilection for Hyde Park should encounter the same sinister fortunes as all their earlier aspirations. It is unnecessary to more than allude here to the hostility which the suggestions of the Royal Commission encountered. The topography of the metropolis was thoroughly explored; its capabilities, intra and extra-mural, rigidly weighed; numerous sites pointed out, which, if they did not fulfil any of the fancied requirements of the projectors of the scheme, at least compromised none of the great vested interests of good society. Battersea Fields, the Isle of Dogs, Victoria Park, Wormwood Scrubbs, and other devious localities, seemed less objectionable. The obstinacy of the Royal Commission and two divisions in Parliament eventually prevailed. The deluge of public animadversion began to subside; the windows of the firmament of Prince's Gate were closed: and on the 30th of August the peaceful messenger of the Royal Commission returned bearing the investitory branch from the Woods and Forests marking the Ararat of the Queen's

* The Exposition of 1851: by Charles Babbage, Esq. London: 1851.

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Drive as the resting place for the future Ark. The Building Committee called for designs. Two hundred and forty were sent in, with what results will appear from the following extracts of the minute dated 16th May, 1850:—

‘We have the honour to report that we have examined the numerous plans so liberally contributed by native and foreign architects in accordance with the public invitation.

‘We have, however, arrived at the unanimous conclusion, that able and admirable as many of them appeared to be, *there was yet no single one so accordant with the peculiar objects in view*, either in the principle or detail of its arrangement, as to warrant us in recommending it for adoption.

‘In some of the least successful of the designs submitted, we find indicated errors and difficulties to be avoided, whilst in the abler and more practical of them, there are valuable conceptions and suggestions which have greatly assisted us in finding the plan we have now the honour to lay before you. . . .

‘The principal points of excellence we have endeavoured to attain are:— 1. Economy of construction. 2. Facilities for the reception, classification, and display of goods. 3. Facilities for the circulation of visitors. 4. Arrangement for grand points of view. 5. Centralization of supervision. 6. Some striking feature to exemplify the present state of the science of construction in this country.’

This 6th requirement the plan so found sought thus to attain:

‘In order that the building, in which England invites the whole world to display their richest productions, may afford, at least in one point, a grandeur not incommensurate with the occasion, we propose, by a dome of light sheet iron, 200 feet in diameter, to produce an effect at once striking and admirable.’

This plan, however, was, it would seem, as unanimously rejected by the public, as those of the public had been by the Committee. This must be regarded as decidedly the most critical juncture in the affairs of the Royal Commission. They had, already on the 17th of March, notified their intention of opening the Exhibition on the 1st of May, 1851, and on the 16th of July they had so far advanced, as to have arrived at the somewhat startling conclusion, that they had exhausted the constructive talent of Europe, and their own, and in vain.

It was in this dark hour when the fortunes of the Royal Commission seemed most desperate, that Mr. Paxton entered on the stage. In the midst of fruits and flowers, and the princely seclusion of Chatsworth, he had heard of battles, and he longed to follow to the field some warlike lord, and of such, in and out of the Building Committee, there was rumoured to be no lack.

It was not, he tells us, until the war of words was raging with great fierceness, that the thought occurred to him of making a design which would obviate all objections. He was just then constructing a palace for that most remarkable plant, the Victoria Regia. He came to London, stepped over the ground to ascertain its length and breadth; saw Mr. Cole of the Executive Committee; within nine days had his plans digested and matured under the advice of Mr. Stephenson, and Mr. Barlow; had communicated with Fox & Henderson; found in Lord Brougham the warlike lord he sought, 'who from that time forth never uttered one word against the building, but became 'its warmest supporter.' Within a few weeks Mr. Paxton's plan was accepted, and in course of realisation. We have here given Mr. Paxton's own history of his design. Some doubts have been at various times raised respecting that gentleman's claim to be regarded as the inventor of the most characteristic features of the great structure. Mr. Paxton, the accomplished designer of the Crystal Palace, is perhaps himself not aware of the extent to which it might be possible by antiquarian research to trench upon his glories.

It has always been regarded as the immemorial duty of the critic when sitting in judgment on any work aiming at unusual novelty of conception, to examine with watchful eye the muniments of such claims; and the scrutiny has generally, some how or other, eventuated in their negation. The jealous muse of criticism has usually deemed it her first duty to remove whatever laurels may have been placed by other hands upon the hero's brow, as a preliminary to the award of that crown which it is her peculiar province to bestow. We have seen that 240 different designs had been contributed by various persons; eighteen of which, three English and fifteen foreign, were considered deserving of special honorary mention. Among these was one, that of M. Hector Horeau of Paris, of which the Building Committee made a still more special honorary mention. M. Hector Horeau had been a competitor for the construction of the recent Temple of Industry erected in the French capital. His design for the Hyde Park structure is thus described in the 'Builder' of the 15th of June, just *one month* before Mr. Paxton had announced his plan. 'M. Hector Horeau's design is for a building mainly of glass and iron,—a winter-garden in fact,—and displays much ingenuity. The iron-ribs of the roof are arranged so that, for the whole of the building, although of varying span, only three castings, it is said, will be necessary.' In this description, we find included almost all the features of the present Crystal Palace; so much so that it would be hardly

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considered an imperfect description of the building as it actually stands. Let us add to this, that among the other contributors of designs, was one, Mr. Courtney, whose plan for the internal arrangement of the space would correspond pretty accurately with the existing distribution. In the Exhibition itself a model will be found of the building intended to be erected by Messrs. Turner of Dublin. This structure was also to have been exclusively of iron; and is honoured likewise with special mention, conjointly with that of M. H. Horeau, in the Report of the Committee. With respect to the latter it is noteworthy that the designer, like Mr. Paxton, had been conversant with the necessities of horticultural architecture, having built the great palm-house at Kew. We shall subsequently see what influence this 'floral style' is, in the opinion of one of the most distinguished foreign architects of the day, likely to exert on the mind of a designer.

It is far from our intention by the foregoing observations to deprive Mr. Paxton of the exclusive merit attaching to the originality and the wholeness of his most happy design. We only desire to indicate the dangers of antiquarian research, and with the more willingness, as the subjects of our commemoration seem to have hardly come in for their fair share of public acknowledgment. Happy ideas know no limitation of time or place, and are more likely to occur contemporaneously than apart. The discoveries in art and science have been especially simultaneous in modern times. The last-found planet—the Galvano-plastic art, and the Daguerreotype,—each discovered in distant countries at the same moment,—are each an instance of a simultaneity, that is at once a guarantee of our intellectual progress, and a consequence of the wide-spread activity of human thought. Mr. Paxton is undoubtedly, both by the entirety of his plan, and his numerous ingenious contrivances in detail, as completely the father of the Crystal Palace, as Caxton is the father of the English printing press, even though Gutenberg may have preceded him. He found the building of brick and mortar, and left it of glass and iron.

On the rejection of the plan of the Building Committee, and their adoption of the design of Mr. Paxton, certain modifications became necessary to meet the more than druidical reverence of modern Britons for the frondent shade of certain trees. Some of these had, indeed, leaped from their roots at the well-known voice of the Magician of Chatsworth. One, however, remained, and at every attempt to lacerate its boughs a voice issued—

. . . . gemitus lachrimabilis imo
Auditur tumulo,—

from the gallant Polydorus of verdant Lincoln — a very arboreal *estatica* — realising the bleeding miracle of the poet of Mantua, and at least as genuine as those of Rimini. A fitting site had been now found for the great choragic ‘Lanthorn’ of Industry. The execution of the design was entrusted to Messrs. Fox and Henderson. These gentlemen belong to a race of modern ediles, such as Rome never saw, peculiar to this age, and in some measure to this country. These are the men of tubes and tunnels, true descendants of Jubal and Tubal Cain, excelling workers in brass and iron. They level hills, turn the course of streams, rear structures with a celerity and ease that shame the Pharaohs. Like the Roman ediles they are an essentially popular element, but have like them raised themselves to the Patrician order, occupy chairs of greater dignity and power than the *sella curulis* ever conferred; and include in their order one, whose achievements at the Menai Straits raise him to the rank of Pontifex Maximus, — the last step to which the Roman ediles, as we are informed by history, attained. The costliest among the golden and silver splendours of the world’s show, is the pictorial shield which displays the ‘jus imaginum,’ and recognises the merit of one of this order — Mr. Brassey; and the tales of the munificence of this Giant of Causeways mock all belief. The gift of 10,000*l.* to relieve the distresses of a partner’s widow is one among these legendary narratives, but with more of truth, we believe, than generally characterises a legend. On the marvels wrought by the constructors of the Crystal Palace it is needless to descant. In seven short months they reared an edifice, which by the common consent of all men and nations is of a more thaumaturgical character than any of the varied wonders it includes. There is something so simple and characteristic in the following statement of the fashion in which these men do extraordinary things, that we must make room for the description, given in our hearing by Mr. Fox, of the mode in which he sought to realise the nature of his task to his own mind. ‘When our tender was accepted,’ said the speaker, ‘I walked out in the evening and paced the length of ‘Portland Place. I found this street corresponded exactly with ‘the site in Hyde Park; the houses on either side were nearly ‘the intended height of the sides of the building; the street ‘was about one fourth of the width; I then felt that it would ‘indeed be a *big* place. Feeling that the same man should draw ‘the plans and execute them, I made all the working drawings ‘with my own hand, and watched over their execution to the ‘last.’ We need not here advert to the difficulties interposed by the apprehensions of well-meaning advisers, — the shortness

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of the time allowed, the unusual wetness of the season, or the combinations of the workmen. An army of nearly two thousand men were constantly employed in rearing this fabric, and to the power of discipline and organisation to which they were subjected is it alone attributable that the work was done, well done, and done within the stipulated time. Those who desire a more intimate acquaintance with the extraordinary resources which were here brought to bear, may be referred to the accounts given in the many professional works which have appeared on the subject. It might amuse but it could have no real utility to recapitulate the various objections from time to time suggested during the progress of the works, to the scientific principles adopted, and supposed to be violated in its construction. It is more satisfactory to reflect that dynamic principles in themselves novel, and opposed to received doctrines of metallic vibration, tension, elasticity, expansion, have been now fully established, beyond all cavil, and by the severest of tests. It is due to Mr. Cubitt, the Chairman of the Building Committee, to state, that he assumed much of the responsibility and shares the merit of these results. Before dismissing this subject we must make room for an anecdote which may not be altogether out of place, as happily defining the difference between the power of realising a conception of abstract beauty, and the working out of a great practical design. Professor Kiss, of Berlin, the author of the much admired Amazon group was so struck with the mechanical wonders of the building, that he sought an opportunity to express to the constructor, through the medium of an interpreter, his sense of astonishment and admiration of this extraordinary achievement. When the artist had given vent to the fulness of his feelings in the genuine outpourings of a German artist's heart; 'Tell him,' was Mr. Fox's epigrammatic reply, 'I can *make* this'—pointing to the building—'but I could not *do* that'—pointing to the group. In this *make* and *do* lies just the difference between constructive talent and creative genius—manufacture and art.

The following extract relates to this branch of our subject. The original Paper emanated, we have reason to believe, from the pen of a writer, himself the architect of one of the most admired of modern edifices—the late Dresden Opera-house; and its remarks on the structural peculiarities of the building are of a character sufficiently interesting to excuse our translation and insertion of them here. The unhappy political convulsions of the year 1849 proved equally fatal to the high professional position of its author, and the graceful monument of his genius. The Paper was written on the eve, and amidst all the bustle and preparation of the opening:—

‘ When the busy din around us threatens to overwhelm our
‘ senses, how gladly do we seek composure by allowing our eyes
‘ to rest on those trees, which the building still encircles with its
‘ net-work, and the axe has spared! How charming! as stimulated
‘ by the busy scene around them, they seem hastening to strip off
‘ the last cinctures that confine their blossoms, and with their
‘ fan-like forms fill out the lofty canopy of the transept, blending
‘ their verdant foliage with the bars of its airy lattice-work.
‘ What a contrast between the noisy scene below, and the ma-
‘ jestic silence with which nature completes her works. The
‘ whole picture breathes all the youthful yet antique life and
‘ freshness of a Pompeian fresco. It does honour to the architect
‘ who has so successfully brought his work into such entire unison
‘ with nature; and, considering the character and conditions of
‘ the problem to be solved, it is hardly possible to conceive a dif-
‘ ferent, not to say a better, solution—the best criterion of a happy
‘ conception. Perhaps none other than a horticultural artist
‘ could have succeeded in devising so fitting a cradle for a project
‘ whilst yet in embryo. The first suggestions of fancy are ever
‘ shapeless and gigantic; they shrink into form, and condense
‘ as they become matured, in this inverting the laws of organic
‘ development.

‘ The simple problem was to portion off such a space from the
‘ open air, as should include a world of bazaars, and protect them
‘ from the influences of the weather; all else was vague and un-
‘ decided. As yet no statistics existed to determine the relative
‘ exhibiting requirements of the several States. The building
‘ must, therefore, possess a certain degree of elastic expansibility;
‘ and consequently no limiting configuration, such as that of the
‘ circle or the square, was admissible. Instead of any compact
‘ relation among the interior members, it must offer capabilities
‘ of easy partition and be fashioned in the spirit of a huge en-
‘ campment.

‘ For the fulfilment of such a task, the artist, who had already
‘ provided for the similar requirements of his exotic plants, pos-
‘ sessed some facilities. Structures of the latter class identify
‘ themselves in a measure with living nature; their walls and
‘ roofs invisible to the eye, and the more slender and impalpable
‘ their parts, the more suited to their purpose.

‘ Little was needed to render this class of structure adapted to
‘ the present purpose. Here, too, no architectural embellishment
‘ must compromise the internal requirements, and consequently
‘ all conventional rules and decorations must be laid aside. Much
‘ light is needed, but sunshine injurious; a *velum* must, therefore,
‘ shroud the glassy *hypæthros*; or rather, it was necessary, in an

' artistic point of view, that the latter should fall with a graceful
 ' swell within the roof; and had the glass been stronger this would
 ' have been feasible. In that case the slender columns would
 ' have become the bearers of the primitive *velum*, which would
 ' have completely harmonised with the suspended draperies and
 ' figured carpets, that hang perpendicularly between the columns
 ' and fill up the intercolumnar spaces; and thus, in our age of most
 ' complex knowledge, we should have seen in this marvellous
 ' building the original type of the most primitive form of archi-
 ' tecture unwittingly realised. Out of the canvass stretched on
 ' poles, the Egyptian flat roof grew; and the original perpen-
 ' dicular partition, the suspended carpet, is the prototype of all
 ' the rich panellings, paintings, or other plastic decorations, in
 ' wood, stone, or metal, which in after times supplied the place
 ' of the original woven fabrics. The numerous trophies and
 ' ornaments suspended from the columns and girders, point to the
 ' original motives in the decoration of all columns and beams.
 ' The *velum* now wanting might be in future supplied by stained
 ' glass, and in the ornamentation of the draperies, machinery can
 ' be brought to bear with less detriment to refined taste, than has
 ' been unhappily the case in other branches of the decorative art.
 ' Who does not feel that iron arabesques and ornaments produce
 ' a feeling of disgust? and is it not perhaps a sign of a revival of
 ' better taste, that architecture ventures to exhibit the simple
 ' effects producible by those materials, the ornamentation of
 ' which is susceptible of extension by mechanical means, and
 ' thus leaves the field open to future improvement? This primitive
 ' simplicity of the work seems to constitute its architectural im-
 ' portance. On the other hand, a complete revolution must take
 ' place in English manners before the glass roof can find adoption
 ' in private dwellings or religious edifices. It would lead to the
 ' introduction of courts and the Italian Palazzo style, as has long
 ' since taken place in Russia.

' In conclusion, a word as to the transept, which now merely
 ' serves as a covering for trees; and the necessity for which is not
 ' sufficiently obvious from any reference to the internal economy
 ' of the building. Here must be the seat of the Areopagus that
 ' awards the prizes, the only stable point in the midst of a build-
 ' ing elsewhere subject to indefinite expansion. As to the exterior
 ' it is needless, for the reasons already assigned, to make much
 ' comment. To buildings of this character it has hitherto been
 ' found impossible to give such a configuration as can be taken
 ' in at a glance, and therefore satisfy the requirements of a
 ' strictly æsthetic feeling.'

On the subject of internal decoration all opinions seem favour-

able to the system of colouring adopted. Though naturally propitiated by the prevailing 'buff and blue,' we cannot assent to the axiom of Mr. Owen Jones: that these colours should always be wedded with the 'crimson'—our own hopes and tastes are adverse to such a necessity as a law. But we gladly summon up this native hue of modesty in the artist's cheek, by comparing the results achieved under his supervision, with those of a rival. Speaking of the late building in Paris, the valuable Report to which we have already referred, remarks:—

'Both externally and internally, there is a good deal of tasteless and unprofitable ornament; all the pilasters are papered and painted in a species of graining to imitate light oak, and even the ceiling is covered over with the same work. Large carton pierre trusses apparently support the timbers, and a painted bronze bas-relief fills the tympanum of the pediment at the principal entrance. The architecture of the whole is *mesquin*, although the gigantic scale of the building necessarily elevates the general effect into something of impressiveness; not however to the extent which the same outlay might have produced.'

The concluding remark of the foregoing extract induced us to make some calculations on the relative cost of the two buildings, which we have here ventured to compare; and the result is in so far very satisfactory, as it establishes the advantage, in point of economy, of our own building over its Parisian rival. The French structure covered a space of about five acres, or just one fourth of that in Hyde Park. The sum paid for the temporary or three months' use of the materials—timber, with a roof of zinc, was about 18,500*l.* So that the cost per square foot amounted to 1*s.* 3*d.* As the superficial area, including the galleries, of the Hyde Park building may be assumed at about twenty-five acres, and the sum agreed to be paid for a year's use of the materials is 78,000*l.*, or about 1*s.* per foot, there is an obvious saving in favour of Mr. Paxton's design.

We must now return to the Royal Commission, who have by this time taken up their abode in the building itself, awaiting its completion. The task of organisation had been pushed forward successfully throughout the country. Local committees had exhausted their stock of queries—most of which had through the lapse of time answered themselves. Manchester redeemed its character by liberal contributions. The banquet of Mayors had gone off with *éclat*. Influential exhibitors in forty towns had, on the suggestion of Sir Robert Peel, been induced to apply for space, whose example acted pretty much like the mirrors, which our transatlantic neighbours insert in their newly

invented rat-traps in order to stimulate by the terrors of competition the avidity of the candidates for the caseous bait. Many of the public Journals gave in their adhesion. The Morning Chronicle, gifted with a keener foresight than many of its contemporaries, on the dawning success of a cause, of which it had through good and evil report been an unwavering supporter, striking into a new path, opened its columns to such foreign contributions, both French and German, as the interesting one of the Dresden architect, an extract from which we have presented to our readers in an English garb. Applications for space, vertical, horizontal, and lateral, began to pour in from home and distant committees. Professor Johnson, 'on the part of some of the States near the Rocky Mountains, craved a little 'time for the transmission of their goods.' The sale of the Catalogue-right and refreshment monopoly produced larger amounts than had been anticipated. On the whole, the prospects of the Commission had become considerably brighter. Two questions, however, remained unsolved,—the publication of the prices, and the terms of admission for the public and exhibitors.

The first of these questions has been discussed at considerable length by Mr. Babbage in the work to which we have already alluded. On the abstract principle of its being desirable to know the cost and every other particular respecting the articles exhibited, there has never, as far as we are aware, existed any difference of opinion. The difficulty seems to have been the attaining a correct knowledge of the prices; and the obstacles have been two-fold, — the unwillingness of the retail-trader to have the prime-cost made known, and the unwillingness of many manufacturers to state the real price of their fabrics. In an undertaking of an altogether voluntary character, a compulsory disclosure of any information studiously withheld is not feasible. There are also, as regards the present Exhibition, two elements of price of which Mr. Babbage seems to take no note—custom-duties and agio. We, for our part, should have been glad to have seen the tariff of each country suspended in each department, and the protective duty which it enjoys marked on each article. To complete the idea of price as regards the casual visitor, it would have been necessary to state the duty at which it is admissible into the country to which the importer belongs. It would be necessary to state, in addition, the transport expenses, and the quantities and the time in which the article could be delivered. For an intending purchaser these calculations are a matter of course—but still not made without considerable difficulty. In many of the cases which have come under our own immediate notice, with every desire on the part of the seller to obtain a

purchaser, it proved impossible to give the information desired. Let us take an example. The price of the American reaping-machine of Mr. Mac Cormick, which has attracted so large a share of attention, is stated to be 28*l*. If a German desire to purchase one of these implements, he is informed, that he must wait until a patent has been obtained in the State to which he belongs, and the required machine constructed there, as the customs duty on a single machine would be nearly 10*l*. in the Zollverein. The cost of carriage of such a cumbrous implement from the United States precludes the possibility of its being supplied from thence. The price is, for the present therefore, wholly unascertainable. Let us take another example. Suppose an English purchaser desirous of buying some of the remarkably cheap cloths exhibited from Brünn in Moravia, the low price of which is said to have tempted one of the jurors of this class to abandon the office of inquisitor in Hyde Park for a more practical test in Brünn itself. We will suppose him to have made a purchase to the value of 1200 guldens. These 1200 guldens, if paid in English gold, are at present equal to about 1000 guldens, or in the ratio of about 12 to 10, such being the present rate of exchange, but so fluctuating, that within three months it may easily rise or fall 10 or even 20 per cent. Practically speaking, we do not think that it would have been possible to add much more to our knowledge of prices than is conveyed in our own priced lists, and the priced catalogues which several of the foreign countries, such as Belgium, Spain, Russia, Austria Turkey and the States of the Zollverein have published. In many articles, chemicals for instance, the price is quite illusory, as it would be found that but very small quantities could be obtained at anything like a useful commercial price.

The general question of admission of exhibitors and visitors, which at one time threatened to assume an alarming aspect, found a solution which must be considered as reconciling the interests of all concerned. Exhibitors, both home and foreign, were admitted gratuitously, and the graduated scale of entrance fees charged to the public seems to have met with general approbation. The issue of season tickets was a happy idea, conducive to the comfort of the holders and the revenue of the Commission's exchequer.

We have now disposed of the most important preliminary questions which so long agitated the public mind. There were still many who, like the worthy parishioners of Marylebone, viewed the rising structure with the feelings with which the inhabitants of the Scæan Gates of Ilium may be supposed to have regarded the great Trojan horse, which was to bring a

foreign foe within their walls. But the contractors plied their hammers,—

Instar montis equum divinâ Paxtonis arte
Edificant;

Many of the foreign commissioners, of the foreign goods, and foreign workmen had arrived. Now began the duty of assigning to each country its proper limits. We believe the suggestion of a geographical distribution according to the terrestrial relations of each State originated with the Chairman of the Executive Committee. This happy idea of assuming the transept as the equator, and proceeding according to Mercator's projection solved many difficulties. But still it is little known how the political feelings and passions of the great world were mirrored in this microcosm. The intrigues and *tracaseries* of diplomacy were as actively displayed on the miniature chart of the Executive Committee as in the cabinets of kings. The cave of Æolus itself could have hardly afforded the gallant Chairman greater facilities for testing his 'Theory of Storms' than his own narrow chamber. To this day the question of Schleswig-Holstein remains undecided, after having given rise to the most stormy and animated protocols. The official recognition of Algiers as an integral part, not mere adjunct, of France by Captain Owen, was demanded with a degree of insistence that might have startled Pinnock or my Lord Palmerston. Whether Holland be styled Holland or the Netherlands; whether Turkey be Turkey, and Egypt be called Egypt, may seem a matter of no great difficulty. Whether the proper style be Norway and Sweden, or Sweden and Norway, may appear of little moment. But all these are questions which occupied much of the time of the distributors of the territorial limits. The partition of Poland itself has hardly provoked more discussion than the struggles of Prussia and Austria to absorb the small kingdom of Saxony. Spain actually refused to exhibit unless provided with an entrance distinct from that of Portugal; and the transposition of the Imperial furniture court of Austria from a southern to a more northern latitude seemed pregnant with consequences as grave as those attending the transfer of the Court of the Emperors from Rome to Byzantium, and actually led to a blockade of the Austrian consignments for a week in the port of Hamburg. Every change in the political horizon made itself distinctly felt here, just as the curious Chinese mirrors reflect on their surface the grotesque images at their back.

Under the conjoint influences of time, the firm suavity of the Executive Committee, and perhaps the sense of a common

danger from the slight leakage of the roof, the heat of these topical animosities gradually subsided. In the English divisions all proceeded smoothly. The admirable classification, according to the minute and exhaustive system of Dr. Lyon Playfair, well adapted as the basis of the future Census and Custom-house returns, worked with the most satisfactory speed and tranquillity. One class of objects alone proved an exception. Wigs—once so venerated—sued now in vain for a place for fitting display. There were four several categories, under any one of which, consistently with a strictly scientific distribution they might be classed. 1. Raw products; class IV. animal substances used for personal adornment; wool, hair, bristles: 2. Manufactures, class III. articles of clothing, as hats, caps, bonnets; 3. skins, furs, feathers, and hair. It seems, however, that none of the superintendents of these several classes would admit their claims as paramount. The result was, that whilst some were to be found in class 16. leather, including harness and their antipodes boots and shoes, others eventually settled down into class 2. chemicals, and dyes. It is further worthy of remark, as indicative of some strange, perhaps hereditary, inquietude of this class of articles, that we find their single exhibitor in the Russian department, a French hair-dresser at Odessa, actually petitioning the Russian Commission to induce Her Majesty to postpone the solemn opening on the 1st of May for the space of three days, to enable him to get his six interesting wig-blocks in becoming order for the occasion.

We must not omit alluding to one happy result of those political convulsions on the Continent of which we have already spoken. Pending the internal arrangements and subsequent display, the demand for persons acquainted with foreign languages was, as may be supposed, unusually great. This want was in a great measure supplied by the large number of political refugees, whom the late convulsions had domiciled in this country. It is at once a curious and instructive fact, that the vast majority of those who formed the immediate *entourage* of the royal personages visiting the Exhibition, consisted of men who, having been condemned for democratic opinions in their respective countries to imprisonment for life, or even to death, had eluded the vengeance of the laws and the vigilance of the police. Indeed, it seems improbable, had it not been for this singular source of supply, that the labours of the Foreign Commissioners would have been completed so early, or at all, except at an enormously increased pecuniary sacrifice. In no case, however, have we heard of any evil consequences arising from this source, and in but one of the subsequent dismissal of

an official, on merely political grounds. We may here further state that of the twenty foreign interpreters, whom the Commissioners of Police, from obvious considerations, deemed it prudent to appoint previous to the 1st of May, sixteen were dismissed within a very short period, their services being altogether unneeded, as hardly a single case occurred calling for their intervention, notwithstanding the vast concourse of foreigners, who crowded to our shores.

In all their relations with the several Foreign Commissioners, the Executive Committee seem to have acted on the same sound principle as in their intercourse with the local committees at home; leaving the widest possible latitude of action to each, and refusing in all cases the responsibility of interference in details, when not compromising the fundamental principles of the general design. The prudence of this course will be fully appreciated when it is recollected that some of the members of the Foreign Commissions were, from long habit, prone to an ostentatious display of power in their respective spheres. Often irritated from an incapacity to explain or receive explanations, ignorant of our language and habits, — sometimes under the influence of strong prejudices — occasionally mortified by the absence of those marks of courtly distinction, which form the cherished objects of their ambition; they were occasionally not indisposed to escape the responsibilities of a task in itself arduous, by throwing upon the measures and conduct of the Royal Commission and Executive Committee, the responsibility of a failure, which seemed the more probable from the sinister accounts that had reached them before their arrival. We are inclined to think that had these several bodies been better linguists, they might have proved less efficient commissioners, and have wasted in sterile controversy the time needed for action. A marked feature of this period was the number of questions constantly arising on abstract principles; whether, for instance, in the composition of the juries, the most eminent representatives of different branches of manufactures should be assigned to their own or to other branches. It was warmly contended that by making the successful adopters of varying systems judges of forms of procedure differing from those pursued by themselves, you incurred the risk, some maintained the certainty, of their never agreeing to any joint award; so that to insure a practical result you must take a less interested, though worse-informed body. On this and similarly vexed points, Free Conferences were held, but with little result. Two great State federations had already formed. France, Russia, Austria, Saxony, on one side; Prussia,

Bavaria, Switzerland on the other; each with their respective adherents. On one occasion the weaker party resolved on a deputation to Lord Granville, whose affability and fertility of resources secured each suitor at least the semblance of success. The Noble Lord, in this instance, is believed to have yielded *sive dolo, seu*,—rather to the numbers than the arguments of the petitioning body. It subsequently appeared, however, that this embarrassing unanimity arose from a feeling on the part of the dissentients, that the dignity of their several States, irrespective of the opinions they represented, required their presence on all such occasions.

As we have mentioned the subject of the juries, it may be as well to offer a few remarks on their constitution and on their peculiar function—the recognition of merit. A glance at the long array of distinguished names comprised in the list of jurors, both home and foreign, is sufficient to satisfy us of the fact, that the ablest judges in each department of knowledge occupy seats in the great Areopagus of science. Of the ability of the judges there can be little doubt; for their impartiality their mixed constitution affords a powerful guarantee. Individual instances of equivocal qualification, and even of the playful irony of chance may, and we believe, have occurred. Accident or malice has given circulation to the mistake of a member of the jury on ‘Chemical and ‘Pharmaceutical Processes and Products,’ who admired the huge rock-crystal of the Duke of Devonshire as an interesting specimen of Alum. In another instance, we have discovered more direct evidence of fallibility still more amusing. Among the Chairmen of Group D,—Metallic, Vitreous, and Ceramic manufactures—there occurs the name of the Hon. Horace Greeley, whose aristocratic appellative has more of the perfume of Belgravia than Hoboken. In a communication headed ‘Editorial Correspondence, ‘London, May 15th,’ we find the following passage, which, coming from one of the Chairmen of Group D, contains views on a subject upon which all Englishmen feel peculiarly sensitive—architectural decoration—so novel and soothing to our British pride, that we must regret their partial acceptance.

‘The *Buildings* here, says the honourable writer, are generally superior to those of our city of New York—more substantial, of better materials, and more tasteful. There are, I think, as miserable rookeries here as anywhere; but they are exceptions, while most of the houses are built solidly, faithfully, and with a thickness of walls which would be considered sheer waste, in our city. Among the materials most extensively used is a fine white marble of a peculiarly soft, creamy appearance, which looks admirably until blackened by smoke,

‘and time. Regent Street, and several of the aristocratic quarters west of it, are in good part built of this marble; but one of the finest, freshest specimens of it is St. George’s Hospital, Piccadilly, which, to my eye, is among the most tasteful edifices in London. If (as I apprehend) St. Paul’s Church, Somerset House, and the similarly smoke-stained dwellings around Finsbury Oval, were built of this same marble, then the murky skies of London have much to answer for.’

Whilst revelling in the anticipation of the effect of such statements as the foregoing, our feelings were doomed to experience a rude shock. A communication in the same journal some days later, from an envious New York citizen, stated, on the authority of a ten years’ residence in London, that the ‘fine white marble, with the soft creamy appearance,’ of the Hon. Chairman, was, in reality, but *mud painted*. We have looked for the editorial rejoinder, but we regret to say, in vain. Such isolated instances of human fallibility, though they teach the great lesson of humility, can never shake our faith in the old Gothic axiom of our ancestors: ‘to whomsoever God giveth an office, to the same doth He give the necessary measure of wisdom;’ and we shall look with the same reverence on the Institutes, Pandects, and Novels of Physical Law, when once promulgated by the Council of Chairmen in the collective Reports of the Jurors, as we have been long habituated to regard the digested labours of the old Byzantine Jurists embodied in the Justinian code. It is also right to bear in mind, that from the frequency of Industrial Exhibitions in recent times, there is a regular class of practised Judges rapidly forming,—men who derive as much advantage from this practical acquaintance with the subjects of their theoretic studies, as they confer benefit on industrial science, by the loftiness of their views and the wide range of knowledge which they bring to bear on the problems of commercial life. We cannot help regarding this circumstance as of the highest importance, since it has the twofold effect of enabling them to readily distinguish what is really new, and rapidly circulate a knowledge of all that is valuable in such discoveries.

We have now reached the 1st of May. On that day the Royal Commission redeemed their pledge, and reaped the well-deserved reward of all their cares and anxieties. We must leave it to the memory or the imagination to paint the splendours of a pageant more brilliant than any spectacle of modern times. The effect of the dazzling scene was rather heightened than diminished by the mystery that still hung round several of the Foreign departments. America had unfolded her homely

stores — so rude and practical that no aid of decoration could or need impart much external attraction. And here let us do an act of justice by stating, that the apparently disproportionate space occupied by the United States, which has been the subject of so much raillery, had been spontaneously assigned, not demanded. France was much in arrear; but France has never known the art of colonisation. One of her Commissioners remarked on the day of the inauguration: 'You, English-people, have succeeded because you are without experience; you do what is necessary — we, what we have done before.' Much painful anxiety had been felt by Lieut. Colonel Reid, as Commander-in-chief of the allied forces, from the tardy movements of the Zollverein, but M. Consul-General Hebel and his Prussians succeeded, like Blücher, in arriving in time. Russia had not yet opened her rich malachite portals to the public gaze; nor had the Odessa contributor quite succeeded to his own satisfaction in developing his capillary attractions; but even the empty pedestals gave promise, and the rich velvet draperies of the Imperial Chamber spoke of the splendours to come. Hamburg and Switzerland exhibited the punctuality and business-habits of their commercial populations, equally with our own exhibitors; and the other Foreign States were in very tolerable order.

Every road leads to Rome: — but we must not dwell on the crowds nor the wonders that attract them. The commercial value of the latter is less than the fears of our London shopkeepers represented them. You could buy all Prussia for about 45,000*l.*; Saxony for 30,000*l.*; the whole Zollverein for 100,000*l.*; and America and Russia for about 36,000*l.* each! Leaving to some future Hesiod to chronicle the *Ἡμέραι καὶ Ἔργα*, we shall introduce a few statistical tables illustrative of the most striking peculiarities of the undertaking.

The most singular feature in the internal economy of the Hyde Park structure is the number of its different Departments, and the magnitude to which each has swelled. Within its walls we have had a constant population equal to that of a populous city. It has its post-office — its branch bank — its telegraph — its miniature railroad — its little army — its police. Its cafés and table d'hôtes provide for the wants of its local and wayfaring inhabitants. It has made other adequate arrangements for decency and health, of which the great neighbouring metropolis is so glaringly neglectful. The following Table shows the numbers and occupations of the ordinary local population: —

Correspondence - - -	7	Brought over - - -	107
Post-Office - - -	2	<i>Interior Staff.</i>	
Finance - - -	9	Superintendents, Clerks,	
<i>The Admittance Department.</i>		&c. - - -	30
Superintendent - - -	1	Classmen - - -	89
Assistant Do. - - -	1	Porters - - -	7
Clerk - - -	1	Sweepers - - -	36
Season Ticket takers - - -	6	Messengers - - -	2
Money takers - - -	18	Refreshment and Retiring	
Door-keepers - - -	21	Rooms - - -	28
Juries - - -	9	Fire Department - - -	7
Messengers, Office-keepers,		Sappers - - -	200
and Boys - - -	23	Police - - -	400
Variously employed - - -	9	Customs - - -	12
		3 Refreshment Rooms - - -	264
Carry over - - -	107	Total - - -	1182

The above table exhibits the comparatively small amount of the force employed in the attainment of results, the magnitude of which incurs no risk of not being duly appreciated by the five million of visitors.

We have no room for various statistical tables illustrative of the many curious results which the concentration of seductions so powerful as those of the Crystal Palace produce on our social economy. They are in several respects both novel and interesting. One of the most responsible and difficult duties of the Executive Committee was the effort to evolve from pre-existent sources, some approximate estimate, whereby to guard, as far as human foresight could, against dangerous contingencies. The industry of one of this Executive Committee, Mr. Wentworth Dilke, succeeded in obtaining a vast collection of statistical details as to the numbers, conduct, and habits, of the visitors to the most frequented of our public sights. We are indebted to the painstaking researches of this gentleman for the following figures, which we throw into a tabular form to facilitate comparison.

Greatest number of Visitors on any one day at following places:—

Greenwich Fair (Easter-Monday)	-	-	150,000
Greenwich Railway (Easter-Monday)	-	-	23,889
Vauxhall, Admission One Shilling, largest number			21,000
British Museum (Easter-Monday)	-	-	21,005
Exhibition of Cartoons, Westminster Hall	-	-	34,732
Exhibition of Oil Painting, Westminster Hall	-	-	29,572
Covent Garden Bazaar, highest number	-	-	11,000
Ten of largest Theatres, about	-	-	30,000

It will be observed that none of the above can be regarded as quite analogous to the Hyde Park Exhibition. As an instance of the importance which matters apparently trivial attained on this occasion, it will be observed, that the daily receipts from the custody of umbrellas, walking-sticks, and wearing apparel, although conducted on the voluntary system, amounted frequently to 25*l.*, although the charge was as low as two-pence.

The following Table shows the actual receipts to the 25th of Sept. inclusive:—

	£	s.	d.
Subscriptions - - -	67,205	8	10
Season tickets - - -	67,610	14	0
Receipts at the doors - - -	304,018	12	6
Catalogue contract - - -	3,200	0	0
Refreshment contract - - -	5,500	0	0
Retiring rooms - - -	2,104	5	10
Washing places - - -	396	2	2
Taking charge of umbrellas - - -	573	17	6
Medals struck in the building - - -	658	15	10
Weather charts sold in building - - -	5	5	8
	<hr/>		
	451,273	2	4

The highest amount received at the doors was on Saturday, the 24th May, the last five shilling day prior to the commencement of the shilling days, being 5078*l.* The lowest amount received on any day, except the two 1*l.* days, was on the first shilling day, being only 920*l.*

The largest amount received in shillings was 3502*l.*, on Tuesday, 15th July (St. Swithin's Day). On the Friday of the same week 3762*l.* was taken in half-crowns, being the highest amount after the commencement of the shilling days.

The following are the highest amounts received:—

	£	s.	d.		£	s.	d.
Saturday, May 24 - 5078	} at 5	0	Tuesday, August 5 - 3236	1	0		
Friday, " 23 - 4095			Monday, July 28 - 3194	1	0	Eclipse.	
Thursday, " 22 - 3797			Tuesday, June 17 - 3191	1	0		
Friday, July 18 - 3762		2	6	Tuesday, " 24 - 3186	1	0	
Wednesday, May 21 - 3512		5	0	Tuesday, July 8 - 3169	1	0	
Tuesday, July 15 - 3502		1	0	Friday, " 11 - 3145	2	6	
Tuesday, May 20 - 3360		1	0	Thursday, " 17 - 3023	1	0	
Wednesday, " 21 - 3338		1	0	Monday, June 23 - 3016	1	0	
Thursday, " 29 - 3308		1	0	Monday, August 4 - 3006	1	0	
Tuesday, July 22 - 3236		1	0				

The amounts received each day at the retiring rooms vary from 3*l.*, 7*l.*, and 8*l.*, to 28*l.* Receipts for taking charge of umbrellas, &c., from 9*s.* to 25*l.*

In the absence of reliable data to guide their conduct, the

Committee seem to have adopted the principle of leaving the public at large, in a great measure, to consult for their own safety; and the result has fully justified the propriety of this course. The number of daily visitors has been subject to far less violent fluctuation than could have been expected; and the daily returns appear to indicate, as a law, that the maximum power of any Exhibition with us to attract shilling visitors must be somewhat about 50,000 daily. But, perhaps, the most remarkable, as it is the most satisfactory feature in connexion with these large bodies of people, is the fact that on no occasion was the slightest tendency to disorder perceptible, and that not one single instance of wilful damage to any of the articles exhibited has been reported to the Committee.

Incidental to this great occasion, it is very satisfactory to reflect, that owing to the adoption of a happy suggestion of the Prussian Minister, Chevalier Bunsen, very simple and adequate arrangements were made to enable the subjects of Foreign States to examine our great national monuments and public establishments without confusion or difficulty. Each Embassy issued cards, on which the leading objects of attraction were marked upon a miniature chart, together with the rules to be observed in visiting them. It is also well deserving of the highest praise, that foreigners were admitted to view our great private industrial establishments with a degree of liberality and courtesy that has much elevated our national character in the eyes of the world. We have, in a measure, to thank this Exposition for our being no longer regarded as a nation of *boutiquiers*.

The conduct of the Police has been the subject of well-merited encomium. We have heard a distinguished Foreigner declare, that the civility and intelligence of our police, and the number of our water-omnibusses (river-steamboats) were the objects that most excited his surprise. A plan had been discussed by the Foreign Commissioners of opening a penny subscription among their countrymen to mark the universal sense of all foreigners of the exemplary conduct of our constables; nothing but the formal difficulties prevented, as we believe, the realization of this idea.

The primary characteristic of this great enterprise has been the comprehensiveness of the scheme and the world-embracing character of its appeal to the industrial energy of nations. We have been compelled to allude to the melancholy political complications which, occurring at a juncture so critical, had nearly compromised its realisation; but it would be wrong to omit observing, that it found everywhere throughout the civilised world a degree of favour, on its very first promulgation, and

met with a degree of support from Rulers and their subjects that argued well for the intelligence of the age and the inherent soundness of the plan itself. The dictates of civilisation are everywhere alike. 'Different degrees of refinement and not of distance, mark the distinctions among mankind. Savages of the most opposite climates have all but one character of improvidence and rapacity; and tutored nations, however separate, make use of the very same methods to procure refined enjoyment.'

Nations, in truth, in their intercourse with one another know but the two great languages—of war and commerce. And in obedience to some subtle law of national affinities, there seems to be an irresistible impulse among States to cultivate intimate relations either martial or mercantile, through the medium of cotton bales or cannon-balls; the latter being often but an alternative—*on se bat —faute de s'entendre*. Nature, which abhors Dictionaries with the intensity of a Scaliger, provides those two-fold symbols of communication peaceful and aggressive,—of which the Hyde Park Building furnishes so varied a repertory,—as a counterpoise to the barbarising influences of diverse tongues. The Birmingham hatchet, with one end of which the Cherokee Indian scalps his enemy, whilst with the other he placidly smokes his dried leaves, becomes the harbinger of civilisation, just as the gibbet, seen by the French voyager on a desolate coast, assured him of the milder manners of the inhabitants.

Voluntary isolation is now regarded as a crime, and the great Powers of the present day are constantly casting about on the world's chart in search of some land, hitherto jealously guarded against all intrusion. They seem to resent such reserve, as a slight on the co-operative tendencies of the age, and on the comity of nations, and hasten to chastise the pride, which isolation has at once engendered and rendered feeble. We seek out the rude Islanders of the Pacific and barter our varied wares for the oil of the sperm whale, and, by its light, plan new schemes of conquest and colonisation. On the banks of the Senegal and the Gambia we contend with France in cultivating the friendship of the native kings, converting their royal realms into factories of gum or the juice of the palm nut; and we tempt King Dahomey to deck with the industrial products of his slaves a stall in the World's Fair in Hyde Park.

It has often been a subject of regret that on so few of our ancient maps do we find the great commercial routes laid down, by which the amber-merchant in the east, and the tin-merchant in the west, travelled in search of these so sparingly scattered

minerals;—such routes marked side by side with the itineraries of the great conquerors could not fail of suggesting interesting comparisons. We should be enabled to trace back the civilisation of the world to the motives of its first disseminators, and measure the relative influence of gain and glory on the destinies of Empires. How often has it happened that some trivial article of commerce has changed the face of kingdoms. England may be said to owe her great Indian empire to a free-trade feeling in 1620 in favour of pepper. For her Chinese trade and prospects, she is in a measure indebted to her preference of tea to opium. And it would be indeed hazardous at present to predict the wondrous social effects which lie still concealed in the flocculent bulbs of the bombax gossypium and the other species of the cotton plant.

It would be well could we at the same time indicate those changing lines along which the crusades of creed have swept. The same impulse that carried the followers of Mahomet from Mecca beyond the Pyrenees, still carries the Mormon over the Rocky Mountains; and as science is indebted to those Arab philosophers for the uses of the alembic, we may perhaps derive a similar advantage from the followers of the Californian prophet, in learning new uses of the crucible. But the influences of religious enthusiasm have ever been more of a qualifying than a direct character, and have always partaken as largely of the commercial as the military quality. Where the pilgrim halted the pedlar bartered; and the great fairs of Germany seek their origin, as the term *Messen*, or *Masses*, still indicates, in those mediæval gatherings of the pious, for the joint purpose of assisting at the holy offices of the Church, and supplying their other than strictly spiritual wants.

In estimating the future influences of commerce it is necessary to bear in mind the novel combinations and appliances which modern science has placed at its disposal. The diplomacy of trade at the present day is as unlike the commercial negotiation of bygone times, as the armament of our steel-clad warriors little resembles the equipments of our modern soldiery. The pedlar, caravanseries, and the fair, have given place to the commercial traveller, the railroad, and the book of patterns. And the Industrial Exhibition itself may be regarded as the next stage, constituting not more a display of the products themselves, than of the capabilities of the producer.

When considering the immediate effects of the Exhibition in relation to its great instructive purpose, it is necessary to bear in mind, that little there exhibited claims to be new in the absolute sense of the word. Comparatively, few of the articles contributed to any of the several departments have

been specially designed or created for the purpose of exposition: the great majority, however, though well known to particular classes, are still perfectly new to the great mass of visitors. Most of the American inventions, which have deservedly attracted so large a share of attention, have been long known in Europe. Mr. Mac Cormick's reaping-machine, and Mr. Hobb's lock, have both already graced provincial Exhibitions, if we are not mistaken, even in Austria. But this very circumstance is the best proof of the practical value of the present enterprise. So slow are we to incur the responsibility of adopting the results of empiric talent, that it is only in the concentrated light of a Crystal Palace, with the full blaze of the world's recognition of merit illumining our judgment, that we venture on the outlay or the change in our old established procedures incidental to new inventions. It has been sometimes urged that little practical value is to be derived from so extended a field of observation, where the attention is distracted by the multifariousness of the examination and the variety of the objects claiming notice. But the *dilettant*, seeking mere general information, is affected in a way altogether different from the man with a distinct purpose, and in pursuit of some special branch of knowledge. It is very remarkable that almost the only failure which the Commission have to lament, was the attempt to give instruction in the form of lectures. These failed from the paucity of visitors, whose reliance on their eyes in the scrutiny of minute adaptations did not render them indifferent to the generalisations of the lecturer. The following remarks from a New York paper will, however, show in what way our Transatlantic brethren view this point.

'The Exhibition is destined to contribute immensely to the industrial and practical education of the British people. Of a million who come to gaze, only a hundred thousand may come with any clear idea of profiting by the show, and but half of those succeed in carrying back more wisdom than they brought here; yet even those are quite an army, and fifty thousand skilled artisans, or sharp-eyed apprentices, viewing such an exposition aright, and going home to ponder and dream upon it, cannot fail of working out great triumphs. The British mind is more fertile in improvement than in absolute invention, as is here demonstrated, especially in the Department of Machinery; and the simple adaption of the forces now attained, the principles established, the machines already invented, to all the beneficent uses of which they are capable, would speedily transform the industrial and social condition of mankind. I am perfectly satisfied for example, that boots and shoes may be cut out and made by machinery with less than one fourth the labour now required,—that this would require no absolutely new inventions, but only an adaption of those already well known. So in other departments of industry.'

To the other incidental effects we must add the extraordinary diffusion of at least the elements of industrial knowledge, through the medium of our public journals and the legion of guides, handbooks, catalogues, and illustrated publications of all kind, which have given a wholesome and instructive tone to our humblest class of literature. There can, also, be little doubt that the moral effect has been highly satisfactory:—

‘The idea,’ says Sir John Herschel*, ‘once conceived and verified that great and noble ends are to be achieved, by which the condition of the whole human species shall be permanently bettered, by bringing into exercise a sufficient quantity of sober thought, and by a proper adaptation of means, is of itself sufficient to set us earnestly on reflecting what ends are truly great and noble either in themselves, or as conducive to others of a still loftier character, because we are not now as heretofore hopeless of attaining them. . . For why should we despair that the reason which has enabled us to subdue all nature to our purposes, should (if permitted and assisted by the Providence of God) achieve a far more difficult purpose; and ultimately find some means of enabling the collective wisdom of mankind to bear down those obstacles which individual short-sightedness, selfishness and passion, oppose to all improvements, and by which the highest hopes are continually blighted, and the fairest prospects marred.’

The day may be yet far distant when Minerva shall lay aside her lance, or when we shall be fortunate enough to number war—if we may be permitted to continue the metaphor—among the dead languages; but it cannot be doubted that even the many improvements in projectiles and fire-arms, of which the Exhibition offers not a few, are all steps in the path of peace. We are continually, by such means, increasing the distance between the combatants, and placing them less in opposition to the personal prowess and passions of their adversaries than to the laws of inorganic matter. War is becoming a mere problem for the laboratory—a question of the relative expansive powers of certain gases; and the results of future campaigns are likely to depend much less on the strategy of the commanders than on the combination of chemical knowledge and mechanical skill in perfecting the Prussian needle-gun or Minier’s rifle.

What can serve as a happier illustration of the pacific tendencies of our progress, or of the reluctance of science to become the handmaid of war, than the recent discoveries in chemical science in connexion with the xylicate of cotton, and flax, the latter of which has attracted so much attention, and obtained so wide a scrutiny through the medium of the present Exhibition?

* Discourse on the Study of Natural Philosophy.

A few years since the world learned with surprise, almost with dismay, that the most terrible engine of human destruction lay in the explosive qualities of the cotton-fibre, which had hitherto formed the staple of our peaceful industry. But experience soon established the fact that, however applicable the extraordinary powers of M. Schönbein's gun-cotton to the purposes of industrial progress,—the blasting of rocks, the cutting of tunnels, the deepening of mines,—it was little suited to the purposes of warfare. Its indirect application to industrial purposes have been many, and among the most recent, is the silvering process of the Daguerreotype. This year the similar explosive qualities of the flax-fibre has received at the hands of M. Claussen an application, which promises for his flax-cotton, in its peaceful uses, a more enlarged sphere of influence than the gun-cotton of M. Schönbein ever affected to attain. M. Claussen steeps his flax in an alkaline solution, and on the subsequent application of sulphuric acid, explodes every fibre of the mass by means of the carbonic acid gas evolved, rendering the entire substance applicable, from the delicacy of its fibre, to the manipulation of our ordinary cotton machinery. In this way, it would seem, that after having by successive improvements in mechanism attained a rare perfection in the action of our machinery, we summon chemical science to complete by the adaptation of new products, what mere mechanical action could hardly hope to accomplish.

On the ultimate results of M. Claussen's invention, and the economic value of his discovery, it is as yet impossible to decide. But through the publicity which the subject has gained, and the thorough scrutiny to which it has been subjected, there is little fear of its value being unappreciated, or its character remaining long untested. We cannot forbear here alluding to the kindred discovery of Mr. Mercer, which may be regarded as a further step in the same direction, and which stands in intimate connexion with this summoning of chemistry to perform those delicate offices, which the grosser qualities of mechanism attempt in vain. By steeping a piece of common calico in a solution of soda, Mr. Mercer gives a fineness to the texture—from the contraction of the parts—which, besides heightening the dyeing properties of the material, enables him to raise figured surfaces at will, by merely guarding them against the contracting properties of the alkali. For this discovery we are indebted to the present Exhibition—as it was the desire to produce something new for it which fortunately in this instance led to the resumption of inquiries long laid aside. The next virgin discovery of which the Exposition has to boast, is one which comes before it in so unpretending a form that it

might easily escape,—and, in truth, had nearly escaped the observation of the most inquisitive.

The last Number, 220., section 2. of the present edition of the Catalogue, mentions the models of some Lucifer-matches made with amorphous phosphorus. The uninformed reader would hardly guess that this simple statement involves the solution of one of the most curious problems of Vulcanic chemistry, and indicates results of equal importance to commerce and philanthropy. The production and commercial uses of this mysterious body have been hitherto checked by the fearful disease its subtle absorption into the system produces, and by the dangers attending its transport or storage, as it ignites at the temperature of a warm summer-day. The conversion of phosphorus from a crystallised into an amorphous form, strips this dangerous substance of its highly inflammable and poisonous qualities: but, in doing so deprives it of none of its useful properties. At the same time, the fact of this being wrought by a simple change in the arrangement of its constituent atoms, gives us an insight into a series of phenomena equally new and important. Whilst looking at the dull brown amorphous mass, of which a piece now lies before us, and comparing it with the straw-coloured crystallised form, we are no longer surprised at the succession of changes in the internal structure of carbon, from soot to graphite or the diamond. Concerning the entire identity of the amorphous and crystallised phosphorus, there can be no room for doubt, as we can at will reproduce either form from the other, without the addition of any new matter whatever. We have reason to think that the distinguished scholar to whom we owe this important discovery, Professor Schrötter, the Secretary of the Academy of Sciences at Vienna, is not without strong hopes of speedily resolving some of the other elementary crystallised substances into a similarly amorphous state. Such of our readers as desire further information on the subject, will do well to consult the Monograph of the author, and the last edition of the Chemical letters of Baron Liebig, who has already ventured to suggest that many of the minerals composing the crust of the earth may be but different crystallisations of one and the same body.

We must add, that the amorphous matches now lying on our table, of which models only were admissible into the Exhibition, were not produced until within a very few weeks of its closing; and might, in all probability, owing to the accidental failure of the first experiments, have remained long a mere scientific possibility, had not the stimulant of a world-wide fame spurred the manufacturer on to a repetition of the experiment.

This is neither the time nor place to discuss the bearing of the rival capabilities displayed on the great question of national competition. We must await the publication of the Reports of the juries before we can form any such opinion. But we may venture to state, on the authority of the collective whisperings of the deciding body, that the commerce of each country is being gradually forced into paths far beyond the influence of mere geographical distribution. The opinion seems also gaining ground that the most perfect system of Navigation Laws may co-exist with very imperfect laws of naval architecture, and that the reliance on the bolts and guards of a protective system, however venerable or intricate, may prove as delusive on emergency as the complicated virtues of Mr. Chubb's lock in the hands of a Mr. Hobbs. The opponents of free trade were in a great measure its conscientious opponents; and we feel bound to admit that the result fully justifies their sagacity according to their generation. Nasmyth's steam-hammer, Penn's engines, the Britannia hydraulic press, and the building itself, have, we understand, made converts in high places abroad on the subject of duties on iron, which occupies with the great 'country party' on the Continent the place which corn occupies amongst our own.

Were we to presume to hazard an opinion on the general character of the discoveries with which this Exhibition has made us familiar, we should say, that the direction they indicate is such as might be expected from this age—the successful effort to supersede mechanical by chemical agency. The three discoveries already alluded to, and others, such as Mr. Young's solidified gas or parafine from coal, as well as the endless improvements in electro-magnetism,—all point in the same direction. They indicate at the same time the path in which each nation will have to tread to avoid being distanced in the race of industrial competition. The competition of intellect is displacing that of matter; and the votaries of protective duties will have just cause of pride if they succeed in sustaining, even with the highest tariff-power, branches of industry which have to compete with such rivals as a simple chemical discovery creates; for instance, such as amongst ourselves, the power of extracting soda from salt, coupled with the means of utilising muriatic acid through the agency of *gutta percha*—a substance which promises to effect for the chemistry of manufactures what *platinum* has already done for analytic science.

Whatever else the results of this Exhibition prove—and it is far from easy to prognosticate the future—it will have served a large and national purpose in enlightening the world on the real condition and character of the inhabitants of this country. For

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some years past a flood of mendacious literature has poured in upon the Continent, misrepresenting and vilifying the habits, pursuits, feelings, and social condition of our producing classes. Six months of the most searching scrutiny, of an examination conducted by large sections of the populations, on whom these falsehoods have been foisted, constitute the best, and perhaps the only form of vindication which could have proved successful. We cannot envy the feelings of the fallen republican chieftain, M. Ledru Rollin, whilst assisting at the wondrous inauguration of this temple, and reflecting how strange a contrast the scene around him offered to the pictures and predictions of his work on the state of this country. It will have proved on the widest scale, and in the least controvertible form, that all sections of our population combine the most indomitable energy with the most ingrained love of order and respect for their own institutions. It is also worthy of remark, as very creditable to the advanced intelligence and manly bearing of the working classes of this country, that no feelings of jealousy seemed any where to prevail, nor any memory to exist of the many hardships and wrongs to which their brethren had been subjected within a recent period in France. The only instance of violence was that regrettable one to which we have already alluded; but which had more of a strictly ethical than political character. It has been atoned for. As a people we are incapable of malice. Hardly was the building half finished when the popular humour pronounced the gigantic equestrian statue of the redoubtable Godfrey de Bouillon, the chivalrous leader of the first Crusade, to be the effigy of the misused marshal. And the popular *amende* may be said more particularly to have lain in the suggestion, that the huge Flemish steed of the simulated hero was supplied from the sleek stock of the peccant Firm, within whose domain the act had been perpetrated, as an atonement for an offence, — to reach which even Prince Schwarzenberg's familiarity with the defects of our criminal law failed to suggest an effective form of procedure.

In conclusion let us observe, that as few designs ever awakened more alarm at its outset, or ever inspired greater apprehensions for its success during its progress, so in the same proportion have few realisations been more complete, and no consummation more pregnant, we would believe, with lasting good. It may be a matter of difficulty to apportion the exact degree in which all engaged partake of the advantages, or share its honours. But we would fain believe that few with a capacity for improvement have not gained instruction, — and few susceptible of pleasure have not derived enjoyment. They are equally

few, we believe, who will not partake directly or indirectly of its fruits—for as it is the curse of evil ever to propagate evil, so we believe it to be the property of all things inherently good to generate what is good. If all sources of judgment be not fallacious, all classes have increased their stock of knowledge,—enlarged the sphere of their enjoyments, cultivated new and instructive relations, exercised their national hospitality, confirmed their loyalty, and this—without increasing our bills of mortality, or adding to our calendars of crime.

NOTE TO ART. VI. OF THE LAST NUMBER.

IN the Article headed ‘Sir E. L. Bulwer Lytton’s Letters to ‘John Bull, Esq.,’ which appeared in the last number of the Review, we were undesignedly led into the error of supposing that Sir Edward Lytton had at one time held opinions on the subject of a free-trade in corn, different from those which he maintains at present; in palliation of which error we can only say, that we held it in common, we believe, with a large portion of the public. Our general arguments are in no degree affected by our misconception of the steadiness of Sir Edward’s personal convictions upon the question: but we cannot correct our error without expressing our unfeigned regret at having, however unintentionally, misrepresented a gentleman to whom the literary world is under so many obligations.

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