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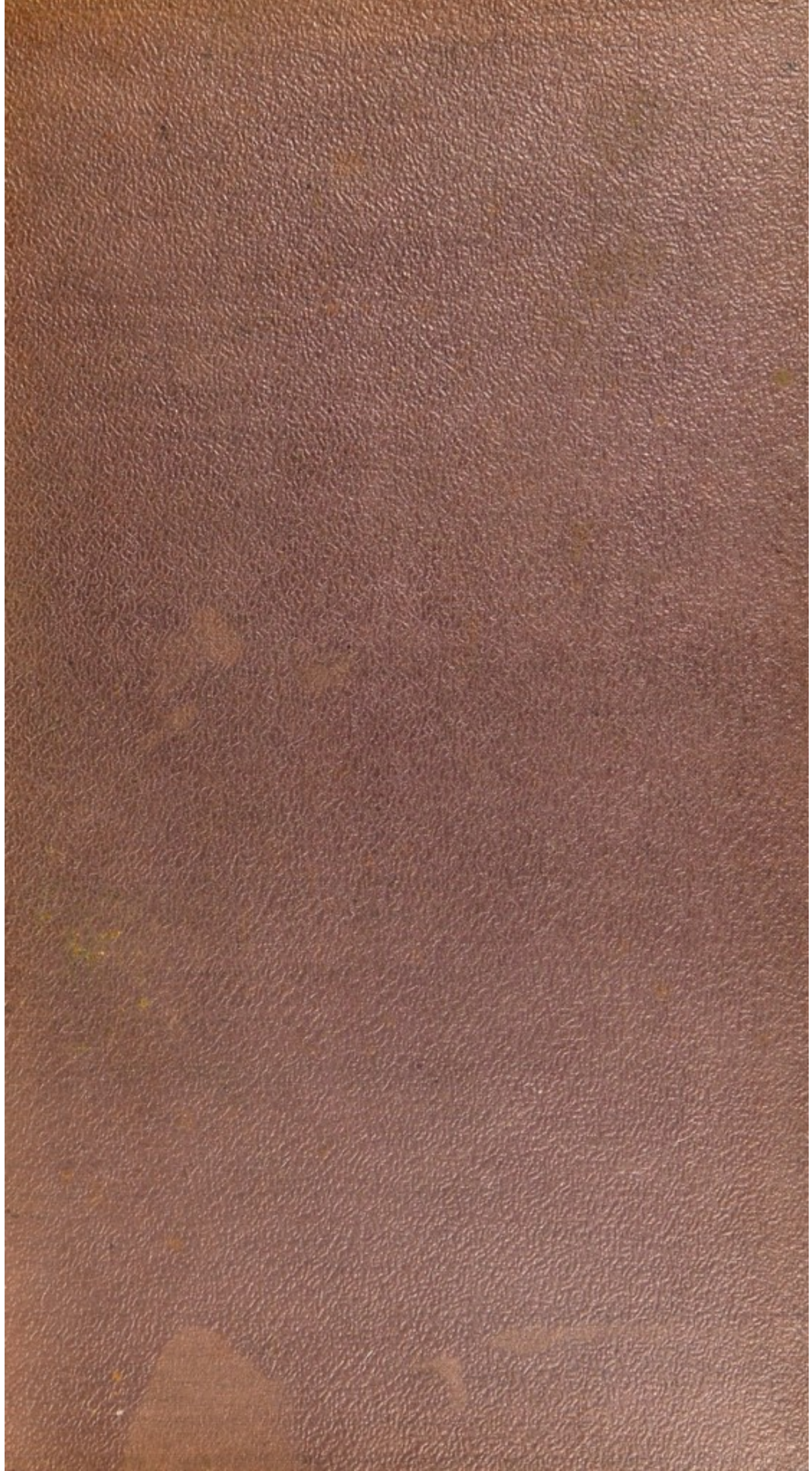
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A

BIOGRAPHICAL ACCOUNT

OF THE

L A T E D R. H E N R Y.

BY

WILLIAM CHARLES HENRY, M.D., F.R.S. & G.S.

MANCHESTER:

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1837.

A BIOGRAPHICAL SKETCH
 OF
 WILLIAM HENRY M.D. F.R.S. AND C.
 WITH A HISTORY OF THE
 MEDICAL AND PHILOSOPHICAL
 SOCIETY OF LONDON



In attempting to present to the literary and
 philosophical societies some memorial of their
 late vice-president, and of his eminent services
 to science, the writer feels that he must rely
 chiefly on facts, and must not indulge
 in any eulogy. It is however, the habit and
 inclination of his mind to sketch the scientific career
 with an impartial position of one to whom
 he owed in the nearest human relation, and
 whose name must ever dwell on his mind
 as a noble inspiration of all that was
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A BIOGRAPHICAL ACCOUNT
OF THE LATE
WILLIAM HENRY, M.D., F.R.S. AND G.S.
VICE PRESIDENT OF THE LITERARY AND PHILOSOPHICAL
AND NATURAL HISTORY SOCIETIES OF
MANCHESTER, ETC.

IN attempting to present to the Literary and Philosophical Society, some memorial of their late vice-president, and of his eminent services to science, the writer feels, that he must rely entirely on their considerate and most indulgent sympathy. He is conscious, that the habits and impressions of his whole life scarcely consist with an impartial portraiture of one, to whom he stood in the nearest human relation, and whose sacred image must ever dwell on his memory as a noble impersonation of all that was pure, generous, and elevated. Yet he is also sensible, that this near affinity and the unre-served communion of thought and of feeling, which it permitted, lay open the sources of more accurate knowledge of character, and kindle a more intense perception of excellence, as re-

spects both the gifts of the understanding and the virtues of the heart. The gratifying kindness, moreover, with which the society were pleased to invite him to prepare such memorial, encourages him to believe, that they will receive it in the same spirit of affection, which they have, in various ways, so strongly manifested towards the memory of their lamented associate and friend.

THE late Dr. Henry was born in Manchester, on the 12th of December, 1774. His early years were passed amid influences, propitious to the nurture of those tastes, for which he was afterwards distinguished. His father, Mr. Thomas Henry, F.R.S. formerly president of this society, was a zealous cultivator of chemical science, to which he devoted all the leisure moments of a life actively engaged in medical practice, with a perseverance and success that have been affectionately commemorated by his son.* The earliest impressions of Dr. Henry's childhood were, therefore, such as to inspire interest and reverence for the pursuits of science; and he is said, when very young, to have sought amuse-

* Manchester Memoirs. 2nd. Series, vol. iii.

ment in attempting to imitate with such means as were at his disposal, the chemical experiments, which his father had been performing. A severe accident, which befel him in early life, by disqualifying him for the active sports of boyhood, must also have contributed to determine his taste for books and sedentary occupations. This injury, occasioned by the fall of a heavy beam upon his right side, was so serious as at the time to endanger life and materially to check his growth, and left as its consequence acute neuralgic pains, which recurred often after long intervals of remission, and with peculiar severity some months before his death. His fortitude, while yet a child, in supporting the sudden paroxysms of pain, which were often so intense as to oblige him to rest in the streets, was most remarkable;—and in his efforts to banish the perception of physical suffering by an absorbing mental occupation, he already manifested that energy of resolution and purpose, which throughout life compelled a feeble bodily frame to keep pace with the exertions of an ardent and unfatigued spirit.

Dr. Henry's earliest instructor was the Rev. Ralph Harrison, whose repute, as a teacher of the ancient languages, was so widely spread, as

to draw to Manchester the sons of persons of rank from a distance, and among others, those of the Marquis of Waterford, attended by their accomplished tutor Mr. de Polier. On the establishment of an Academy in Manchester, which has since been removed to York, Mr. Harrison was chosen to fill the chair of classical literature. His pupil had made such rapid progress as to be permitted, though considerably under the customary age for admission, to follow his preceptor to this enlarged sphere of competition. Here, though struggling with older and more advanced classmates, his diligence and ardour were rewarded by the approbation of his Academic superiors, and he received in the prize allotted to him—an elegant copy of Virgil—the earliest of those literary distinctions, which, throughout life, constituted the main objects of his ambition.

Immediately after leaving the Academy, Dr. Henry had the good fortune to succeed Dr. Holme as an inmate in the house of that accomplished scholar and enlightened physician the late Dr. Percival. A constant liability to violent headaches, combined with weak eyesight, prevented Dr. Percival from writing or reading with the vigour and continuity essential to his various literary pursuits. It was the duty there-

fore of Dr. Henry and of other young persons, who occupied the same place before or after him, to read aloud to Dr. Percival, and to conduct, after his dictation, the extensive correspondence, which he maintained with those most eminent in science and in letters. Dr. Percival's style was peculiarly correct and elegant; and his example and judicious counsels seem to have been most instrumental in guiding the tastes of his young companion, and in establishing habits of vigilant and appropriate expression. Dr. Percival also directed with great judgment and kindness his course of reading, and particularly recommended to him works on mental and ethical philosophy;—thus probably laying the foundation of that taste for enlarged speculation on the moral and intellectual nature of man, and of that faculty of delicately discriminating the finer shades of character and of genius, which contributed so largely to his sources of enjoyment and of fame. Of the salutary influence upon his character, of such intimate communion with this learned and high-minded physician, he was accustomed often to speak in after life with grateful remembrance; and was ever ready to pay his warm testimony to the varied and tasteful scholarship, the enlarged philosophy, and the pure and elevated moral

bearing of his distinguished instructor. In a letter, many years ago, addressed to the writer, Dr. Henry speaks of Dr. Percival as "an illustrious pattern of every thing delicate and pure in sentiment, elegant and dignified in taste, and polished in address and manner:—a man who while he would have adorned a court by his gentlemanly demeanour, yet paid a tender and unceasing attention to the feelings of the humblest of those, by whom he was habitually surrounded."

In this improving residence, Dr. Henry remained during five years, which were devoted to the general culture of his mind, and to the preliminary studies of his profession. About the close of this period he first engaged in the practical observation of disease in the Manchester Infirmary, where he enjoyed the instructions of another of those eminent physicians, who have conferred so much literary glory on this town and on this society, the late Dr. Ferriar. In his invaluable "Medical Histories," the systematized records of his experience in our great public charities, Dr. Ferriar, has left to the profession, the finest existing models of what such narratives of disease ought to be—in style; simple, concise, and energetic, though not reject-

ing on suitable occasions (as in his moving essay on the Treatment of the Dying) the warmer colouring suggested by deep feeling;—in substance; deriving general pathological conclusions, from the accumulated and methodized results of an experience no less ample than sagaciously directed and interpreted. As a hospital physician, Dr. Ferriar seems to have possessed, in an eminent degree, the faculty of at once eliciting truth from the obtuseness or reluctance of the suffering poor, by his abrupt and pointed interrogatories, and by his impatience of all irrelevant matter. He was especially distinguished by strength and rectitude of understanding, by manners perhaps somewhat unbending and severe, by a high sense of honour, and by a fearless and dignified moral bearing. To his pupil, his manner was always friendly and encouraging;—and out of this early intercourse issued the sources of mutual esteem and permanent friendship, which were strongly evidenced, by his confiding, during illness, his medical duties to Dr. Henry, and also by his making choice of him as his own attendant in the successive seizures which preceded his death.

After having been thus initiated in those pur-

suits, to which his after life was to be mainly dedicated, Dr. Henry was removed in the winter of 1795-6 to the University of Edinburgh, at that time in its highest repute as a school of medicine and of the natural sciences. The chair of Chemistry was still occupied by the venerable Dr. Black, whose discovery of the facts, that establish the existence of heat in a latent form, and whose successful discrimination between the caustic earths and their carbonates, had raised him to the highest rank among chemical philosophers. Dr. Henry was an eager hearer of the beautiful prælections, in which Dr. Black, with calm and simple dignity, unfolded in exact and perspicuous order, the truths of a science, which may almost be said to have been first called into existence by himself and his contemporaries. Dr. Henry's early kindled love for science was strengthened by lessons so impressively taught, in which, reverence for the teacher was interwoven with intense delight in the subject matter of his instructions, and, especially, with a glowing admiration of that successful inductive process, which had guided to the discovery of Latent Caloric. Dr. Henry was no less fortunate in his other instructors, both in general and professional knowledge. The important chair of Practical Medicine was then filled by Dr. Gre-

gory, whose marked originality of thought and humour, and whose happy talent of arresting attention by illustrative cases, narrated with dramatic effect, threw around the descriptions of disease a fascinating interest, to which they would seem naturally most alien. On Dr. Henry's second visit in 1805 to the University, he found the chair of Physical Science adorned by the profound mathematical learning of Playfair, and that of Moral Philosophy occupied by Stewart, whose pre-eminence as a teacher has been beautifully celebrated by the most competent judge of modern times.* Of the invaluable instructions of Mr. Stewart, Dr. Henry was prevented from availing himself by the necessity of following at the same hour some professional lectures; but he has confessed that he not unfrequently deserted the Clinical Theatre for the impressive lessons of a higher wisdom. He ever retained and expressed the deepest admiration for the compositions of these two master minds. The style of Playfair, in his Dissertation on Physical Science, and in his biographical notices of Hutton and Robison, Dr. Henry regarded as upon the whole the best adapted to philosophical purposes, which our language possesses, and he had

*Sir James Mackintosh, Preliminary Dissertation, p. 386.

certainly erected it into a standard for his own imitation. In the writings of Stewart he was accustomed to praise the delicacy and correctness of his taste in arts and letters, the easy and melodious flow of his periods, his graceful distribution of ornament; but above all, the elevation and purity of his moral judgments and sensibilities, and the fervour and depth of conviction, with which he ever advocates as inseparable, the interests of philosophy and of virtue.

To this period of his life, Dr. Henry always looked back, as a season of pure and unmingled happiness, arising out of the consciousness of a steady and rapid progress in knowledge, undisturbed by the cares and practical business of life, and quickened by constant intercommunion with minds ardently devoted to similar pursuits. He seems, indeed, to have been peculiarly happy in his intimate associates and fellow-labourers. Nor has the Metropolis of the North ever before or since assembled within its Halls of Science, either so many illustrious teachers, or so noble a company of hearers. Among the latter were numbered Marcet, Roget, De la Rive, Thomson, Allen, Scarlett, and Jeffery; and Lord Brougham, as a youthful disputant in the Speculative, and occasionally in

the Physical and Medical Societies, was giving evidence of those native energies of genius and character, which have since borne him to the highest judicial and political station in this country.

Breathing such an exciting atmosphere, and urged onwards by his own ardent spirit, Dr. Henry devoted his entire time and strength to mental improvement; and has often affirmed that the rest of his life, active as it was, appeared a state of inglorious repose, when contrasted with this season of unremitted effort. It was, therefore, with deep regret, that after a year thus spent, he quitted the University, in deference to prudential considerations, with little prospect of ever revisiting it as a student; and engaged in association with his father in general medical practice. After a few years experience, however, the inadequacy of his delicate frame to bear up against the fatigues of this branch of the profession became evident, and he was permitted, in the year 1805, to return to the University, where he received in 1807, the diploma of "Doctor in Medicine."

The period intervening between his two academic residences, though passed in the engrossing occupations of his profession, to which was

added the superintendence of a chemical business, many years before established by his father, was yet marked by several important contributions to science. In 1797, he communicated to the Royal Society, an experimental memoir, the design of which was to re-establish,—in opposition to conclusions drawn by Dr. Austin, and sanctioned by the approval of Dr. Beddoes and other eminent chemists,—the title of carbon to be ranked among elementary bodies. His proofs were derived from the electrization of an impure carburetted hydrogen gas : but it is needless to particularize the experiments, since in a subsequent paper, he made known a source of fallacy, which had vitiated their results. They have value therefore, chiefly as suggesting encouragement to the young, by showing that Dr. Henry had to pass through a stage of tentative initiation before reaching the consummate skill, which afterwards distinguished him in that most delicate province of chemical research.

In the same interval (1800) he also made public through the Philosophical Transactions, some experiments on the Muriatic Acid Gas. This memoir is one of peculiar interest, both as recalling the state of chemical doctrine, anterior to the grand discoveries of Davy, and as mark-

ing the influence of pre-conceived theories on the interpretation of facts. Oxygen was then regarded as the sole principle of acidity, and the muriatic acid was consequently supposed to be constituted of oxygen, associated with an unknown radical. It was in the hope of detaching this imaginary element from oxygen, that Dr. Henry exposed the muriatic acid gas, both alone, and mingled with gaseous matter possessing a strong affinity for oxygen, to repeated electrical discharges. When the muriatic acid gas was electrified alone over mercury its volume was uniformly diminished, hydrogen gas was disengaged, and a white deposit was collected, which proved to be calomel. The decrease of volume and the formation of calomel were much more considerable, when the electric discharges were passed through a mixture of oxygen and muriatic acid gas. When the electrization was performed without the presence of mercury, in a glass tube, closed by stoppers, each perforated with platina wire, chlorine was evolved and detected by the usual test. It is manifest that these experiments, had they been justly interpreted, were sufficient to establish the true view of the composition of muriatic acid gas. Yet governed by the theory of acidification then universally prevalent, Dr. Henry referred the disen

gement of hydrogen to the decomposition of water, which was supposed to be still present in the gas after a week's contact with fused chloride of calcium. Nor was it until many years subsequently that the simpler theory was firmly established by the genius of Davy. To the new doctrine, Dr. Henry, had, however, the merit of becoming an early convert; and in a supplementary essay, published in the Transactions for 1812, he supplied some important evidence in its favour. He showed that the same proportion of hydrogen gas was obtained by electrizing muriatic acid gas, whether it had been exposed or not to fused chloride of calcium; and hence concluded that the hydrogen was eliminated from the muriatic gas, and not from aqueous vapour. He also ascertained, that the muriatic acid gas, when completely insulated in a closed glass vessel, sustained no change of volume from a succession of electrical discharges. This permanence of bulk was made more apparent by repeating the experiment in a vessel with a neck only one-fifth of an inch in diameter. After admitting water to absorb the undecomposed muriatic acid, there remained one hundred measures of chlorine, and one hundred and forty of hydrogen. In conformity with the law of Gay Lussac, the quantities should have been

equal, but the deficiency of chlorine was justly referred to its large absorbability by water. The perfect accordance of muriatic acid gas with the law of volumes was further shown by the observation that the contraction of volume in muriatic acid gas electrized over mercury;—a diminution due to the combination of the liberated chlorine with mercury,—is precisely equal to the quantity of hydrogen gas obtained.

In 1803 Dr. Henry made known to the Royal Society his elaborate experiments on the quantity of gases absorbed by water at different temperatures and under different pressures. The absorbabilities of the different gases, under a constant pressure, by water of 55° Fahrenheit, were first accurately measured. Elevation of temperature was found to lessen the amount of absorption, the diminution for each increment of 10° above the standard temperature being equivalent to about $\frac{1}{4}$ th of the entire bulk absorbable at 55° Ft. In investigating the absorption of the same gas under varying pressures, Dr. Henry arrived at the simple law “that water takes up of gas condensed by one, two or more additional atmospheres, a quantity which ordinarily compressed would be equal to twice, thrice, &c., the volume absorbed under the com-

mon pressure of the atmosphere." This exact proportionality, of the quantities absorbed to the pressures, makes strongly in favour of the theory proposed by Dr. Dalton, that the absorption of the gases by water is due entirely to mechanical agencies.

Dr. Henry described in the Philosophical Transactions for 1808, a form of apparatus, adapted to the combustion of larger quantities of gas than could be fired in eudiometric tubes. Results were thus obtained, which may be pronounced fair approximations to truth, especially when estimated with reference to the still imperfect resources of pneumatic chemistry. The apparatus cannot however be now recommended when extreme precision is desirable. In this year, 1808, he was elected a Fellow of the Royal Society, and in the following year received by the award of the President and Council, the medal on Sir Godfrey Copley's donation, as a mark of their approbation of his various papers communicated to the society and printed in the Philosophical Transactions.

The same analytical method by which the decomposition of muriatic acid gas had been effectuated was in 1809 employed by Dr. Henry

to resolve ammonia into its constituent gases. These experiments may even now be commended as models of extreme accuracy. Ammoniacal gas previously dried with great care, was found to expand to double its primitive volume after a sufficient number of electrical discharges. The average of eight experiments (in five of which the volume was exactly doubled) gave the relation of 100:198.78 between the volumes of gas before and after decomposition, a conformity between theory and experiment, which modern refinement cannot surpass. In this memoir Dr. Henry also made known a remarkably elegant and expeditious method of analysing ammonia, by firing it in a volta tube with a deficient quantity of oxygen. In this process all the ammonia is decomposed, though a part only of the hydrogen thus liberated meets with its equivalent of oxygen. More oxygen is then added to burn the residuary hydrogen:—for Dr. Henry had observed, that if the whole quantity of oxygen was added at once, the results were disturbed by the production of nitrate of ammonia. In estimating the proportion of hydrogen and nitrogen constituting ammonia, he obtained somewhat less hydrogen than the theoretical quantity, a deficiency which he rightly ascribed to the cooling agency of so large a

volume of azote causing a part of the hydrogen to escape unburned. He afterwards by employing nitrous oxide instead of oxygen, obtained and published in the Memoirs of this society, results that establish precise multiple relations.

The gaseous substances, issuing from the destructive distillation of coal and oil, had very early engaged Dr. Henry's attention, and he had at various times devoted much labour both to their chemical analysis and to ascertain their respective fitness for the purposes of illumination. The general conclusions, which he had made known in several successive memoirs, were that these gaseous products are mixtures of olefiant, carbonic oxide, carburetted hydrogen and hydrogen gases in varying proportions, with other accidental impurities, as carbonic acid and sulphuretted hydrogen. An opposite doctrine had been proposed to the Royal Society by a distinguished chemist. It was maintained, that carburetted hydrogen does not constitute a distinct gaseous species, that olefiant gas is the only known compound of carbon and hydrogen; and that the gases obtained from oil and coal are nothing more than mixtures of olefiant with simple hydrogen.

In an elaborate paper published in the Transactions for 1821, Dr. Henry succeeded, however, in establishing the soundness of his original views. He contended that the concurring results obtained by Dr. Dalton, Sir H. Davy, Dr. Thomson and himself, from the analysis of carburetted hydrogen collected both from stagnant water and from the coal measures, at distant times and places, clearly demonstrate that gas to be a true chemical compound, characterized by perfect uniformity of properties and composition. He proceeded to investigate the action of chlorine both upon carburetted hydrogen and olefiant gases, with a view to learn how far chlorine may be depended upon as a means of effecting their separation. Carburetted hydrogen was found to be wholly unaltered by prolonged contact with chlorine, when light was carefully excluded. Under the same circumstances olefiant gas on the contrary was entirely removed by chlorine. Hence he derived a simple and beautiful mode of separating olefiant gas from the other gaseous compounds of carbon with hydrogen or with oxygen, as well as from pure hydrogen. After establishing the perfect accuracy of this process, on artificial mixtures of the gases in known proportions, he applied it to the mixtures of the same gases in unknown

proportions, which constitute oil and coal gases. The best oil gas showed forty per cent of a gas condensible by chlorine; the best coal gas not more than thirteen per cent. The residuary gases, left after the complete action of chlorine, were then detonated in a volta tube with oxygen, and afforded results, showing that they were mixtures of carburetted hydrogen, carbonic oxide and hydrogen gases, in proportions which he was then unable to determine except by approximative calculation.—“No one instance, he concludes “has ever occurred to me of a gas obtained from oil or coal, which after the action of chlorine upon it, with the exclusion of light, presented a residuum at all approaching to simple hydrogen gas.”

In his latest communication to the Royal Society, (1824) Dr. Henry succeeded in conquering the only remaining difficulty in the analysis of these complex mixtures; viz., the ascertaining by chemical means, the exact proportions, which the gases, left after the action of chlorine on oil and coal gas, bear to each other. For this purpose he skilfully availed himself of the property, which had been recently discovered by Döbereiner in finely divided platinum, of determining gaseous combination. Hav-

ing ascertained that carbonic oxide with oxygen is rapidly converted into carbonic acid, in presence of platina at a temperature of 340° Fahrenheit, while carburetted hydrogen is wholly unchanged, till the heat considerably exceeds that of boiling mercury, Dr. Henry exposed a mixture of carbonic oxide, hydrogen, and carburetted hydrogen with oxygen, into which platina had been admitted, to the temperature of 340° . The carbonic oxide and hydrogen were converted into carbonic acid and water,—and their relative proportions easily determined. The residuary carburetted hydrogen was then detonated with oxygen in a volta eudiometer. The numbers thus obtained corresponded precisely with the quantities of the gases that had been mingled together. In further trial of this new mode of operating, it was applied to the analysis of a mixture of the same gases, but in unknown proportions, which constitutes an inferior quality of coal gas. The specific gravity of this gas, derived from the proportions thus ascertained of its constituents, was .303, a number coinciding as nearly as could be expected with the actual specific gravity of the gas .308.

In the course of this enquiry, Dr. Henry

noticed the curious property of gaseous interference, which was observed about the same time, and first made public by Dr. Turner. Though not affecting the main object of his researches, these phænomena attracted his attention by their singularity and novelty; and the experiments, he performed in the hope of unfolding their nature, suggested a theory of interference, which has been confirmed by recent investigations.—“The property,” he observes, “inherent in certain gases, of retarding the action of the platina sponge, when they are added to an explosive mixture of oxygen and hydrogen is most remarkable in those, which possess the strongest attraction for oxygen; and it is probably to the degree of this attraction, rather than to any agency arising out of their relations to caloric, that we are to describe ^a the various powers, which the gases manifest in that respect.”

An Essay on the Compounds of Nitrogen, published in the Manchester Memoirs for the same year (1824), though not adding any facts of moment to the prior results of Gay Lussac, yet made known some new and exact methods of speedily decomposing nitrous oxide and nitrous gas. Thus the constitution by volume of

nitrous oxide, was determined with singular precision by detonating it with carbonic oxide, instead of with hydrogen gas; and nitrous gas was found to form an explosive mixture with olefiant gas.

It is worthy of remark, that all Dr. Henry's scientific memoirs, which have been hitherto enumerated, are devoted to the chemistry of aeriform bodies. For this refined department of science, Dr. Henry always manifested the strongest predilection. Indeed of nine experimental papers, contributed by him to the Royal Society, no fewer than eight are dedicated to the gases. At the period when Dr. Henry's interest was first awakened for philosophical pursuits, the rapid discovery by Priestley of several new gases, and the sanguine hopes inspired by Beddoes of detecting in these subtle and hitherto concealed forms of matter powerful remedial agents, urged both physiologists and chemists to engage with ardour in pneumatic researches. Subsequent experience has demonstrated, it is true, the unsoundness of these projects for enriching with new resources, the art of practical medicine. But the beautiful law, unfolded by the genius of Gay Lussac, that the gases combine in volumes which are

either equal or multiples by an integral number, —by establishing, when interwoven with the Daltonian philosophy, the existence of some simple relation between the numbers of atoms existing in equal spaces of aeriform matter, has almost elevated the pneumatic chemistry to the dignity and exactitude of a mathematical science. There is, moreover, in the pursuit of these subtle elements, which escape the visual sense, which can be imprisoned and weighed only by the most refined instruments, and which can be discriminated only by the most delicate processes and indications, a somewhat of mystery and of a higher initiation, which deeply moves the imagination. It may too be safely affirmed, that Dr. Henry's habits of extreme mental accuracy, his unrivalled manual expertness, and the general tendencies of his tastes towards elegance and precision, peculiarly qualified him to excel in conducting such delicate enquiries.

But although his original efforts in chemistry were mainly directed to the gases, he was by no means a stranger to other provinces of experimental research. His comparative analyses of many varieties of British and Foreign Salt, were important in refuting the prejudices, then

widely prevalent, of the superiority of the latter for certain economical purposes. His Essay on the Materiality of Heat, published in the Memoirs of this learned body, is written with force and perspicuity, though in modern times the tide of doctrine undoubtedly sets in the opposite direction. His critical memoir on the theories of galvanic decomposition has even lately been noticed with praise by Berzelius in his *Jahrsbericht*, as among the first to assert that view, which in his judgment is still most deserving of adoption. But of the soundness and extent of Dr. Henry's acquaintance with general chemistry his "Elements" furnish undoubted proof. This work, which in 1829 had passed through eleven editions, has always held a high place in public estimation, as a clear and faithful record of the details of chemistry, and as conveying in its general chapters, a distinct and comprehensive survey of the leading doctrines and higher philosophy of the science.

Although impelled by a strong predilection to the pursuit of chemical science, Dr. Henry was not an inactive member of the profession, to which he belonged. Besides contributing to the medical journals of the time, such interesting cases of disease as fell under his observation,

as physician to the Manchester Infirmary and other public charities, he engaged in an elaborate investigation of that important class of maladies, which affect the urinary system,—the exact diagnosis of which is well known to rest on indications purely chemical. His inaugural discourse on uric acid; his analyses of many varieties of calculi; and his Essay on Diabetes, were favourably received by the profession, and are still cited with approbation by our best pathologists. Even after having relinquished the exercise of medicine, he continued to feel a deep interest in its advancement, and on a late occasion when the ravages of Asiatic cholera in neighbouring countries suggested the necessity of preventive measures on our own coasts, he established by experiments, as satisfactory perhaps as the nature of the enquiry admitted, the destructibility of various contagious poisons by degrees of heat, inferior to the boiling point of water. It is due, however, to his philosophical caution to state, that Dr. Henry regarded these experiments only as initiatory and as demanding the confirmation of multiplied and varied trials, before being adopted as the basis of legislative enactments. His feelings of interest had been so deeply excited in the laws and higher physiology of contagion, that he embodied all

the facts and evidences he had been able to glean from a most extensive course of reading, in a Report which was communicated to the British Association, and has been published in their Transactions.

Dr. Henry's compass of thought and interest was not however restrained within the limits of his profession and his favourite branch of knowledge. Of the sciences of classification, he had cultivated in early life, with great zeal, both botany and mineralogy; and had formed a creditable collection of mineral specimens. This latter study naturally led him into the kindred pursuit of geology. Indeed, his first academical residence in Edinburgh coincided with the memorable period, when the two rival theories were the objects of constant and eager controversy in all societies, and especially in the higher scientific circle, in which Dr. Henry had the privilege of moving. Shortly after the formation of the Geological Society of London, Dr. Henry was admitted a Fellow; and though he never aspired to collect by personal research, materials for the advancement of that science, yet he diligently possessed himself of all that was successively made known, and deeply sympathized in its prosperous fortunes and high

destinies. During the latter years of his life, especially, these pursuits ministered largely to his sources of enjoyment, and prompted him to undertake several short journeys, with the object of examining interesting sections, and of collecting characteristic fossils. The growing literature of a science, that has attracted to itself so large a share of the intellect and genius of this country, replaced as an object of interest in Dr. Henry's mind, the contemporary progress of chemistry, from the details of which, in consequence of physical inability for experimenting, he had ceased to derive much pleasure.

In polite letters, Dr. Henry had ever been accustomed to seek variety and relaxation from severer study. His range of interest was singularly comprehensive. He took peculiar delight in narratives of voyages and travels, and from such works was in the habit of gathering and preserving all novel facts, that tended to throw light on the physical history of the earth, or the manners and mental habitudes of its inhabitants. He has thus strongly expressed his sense of the value and dignity of such personal labours and perils in the cause of science. "No subject within the compass of human knowledge embraces so wide a sphere of enquiry, or so

much tends to gratify an enlightened and liberal curiosity, as voyages and travels undertaken with a right aim and by persons qualified to reap their rich and varied fruits. To those engaged in them, are offered all the fascination of novelty, all the hopes of wider and brighter prospects of the moral and natural world; all the warm impulses of an honourable ambition to live beyond the present times, and to be remembered by conquests more glorious and more useful than those of the field. These high motives kindle and keep alive a spirit which sustains them through toils, difficulties and disappointments, and enables them to triumph over physical privations and pains, which would dishearten the stoutest if encountered in the every day transactions of life." Biography, especially that of men devoted to the pursuits of philosophy, always occupied him most agreeably,—carrying back his intellectual sympathies to distant periods, and supplying him with materials for after-thought and speculation. His mind had been early nurtured with the choicest fruits of our national poetry:—and the same purity of taste and affections, which in music made him peculiarly accessible to the simpler melodies, guided him to the fresh and gentle beauties of our earlier poets. He often com-

mended as a happy imitation of their manner, "the Castle of Indolence," a poem, which he more than once read to his domestic circle, with that delicacy and truthfulness of intonation which are inspired only by deep and intuitive perceptions of excellence.

In determining the literary merits of the works of others, and still more in the expression of his own thoughts, Dr. Henry was guided by a correct, or rather a severe taste, which might have rendered him over-fastidious; had not his critical judgments been attempered by the fervour of his sympathies and by the comprehensiveness of his mental vision. An enemy of redundancy in expression or in ornament, he erased in the vigilant revisals, through which all his compositions had to pass, every superfluous term, reaching finally as complete condensation of style as was consistent with ease and distinctness. In strictly philosophical writing he was frugal from principle in the employment of imagery; aiming solely at the simple and logical enunciation of truth. But in his literary essays; in his biographical notices, when warmed by the contemplation of genius or virtue; and especially in his letters, when his feelings had been touched by the works of nature, or when surveying the

grand lines and general bearings of science, and shaping forth his future course, as a philosophical enquirer or writer, his style received embellishment and warmth from a powerful yet chastised imagination, and from a heart prone to generous and noble emotions. His eloquent delineation of the intellectual features of his great contemporaries, Davy and Wollaston;—his enthusiastic homage to the soaring and creative genius of Davy and his no less truthful picture of the opposite endowments,—the caution, the sobriety and precision of Wollaston, are probably fresh in the minds of many present; and may recal Mr. Playfair's celebrated contrast of Black and Hutton, both in many qualities common to the minds compared, and in the vigour which characterizes alike both comparisons. An earlier essay by Dr. Henry, entitled *Cursory Remarks on Music*, may also be commended as a fine example of the gracefulness and purity of his style, when handling topics of elegant letters.

Dr. Henry appears indeed to have been eminently fitted both by natural tastes and by after culture, to excel in what may be called the literature of science; comprehending especially under that term, the history of discovery and the didactic exposition of general laws and doc-

trines. In his latter years, he seems himself to have strongly felt, in the perception of growing infirmities, that his season of active research was gone by, and to have looked around for some worthy object, not demanding personal exertions, to occupy what remained to him of life and of mental strength. His thoughts had dwelt for some time on two scientific projects, for both of which he had made considerable preparations. One of these designs, which had floated longest before his mind, and which he was most inclined to realize, was a work that should assemble the beneficent provisions in the Chemical Economy of Nature, which establish the existence and attributes of an All-wise Governor of the Material Universe. He has thus expressed, in a letter addressed many years ago to the writer, his conceptions of the scope and dignity of such an undertaking. "It has always appeared to me a defect in physico-theological works, that too frequent appeals are made to the reason, in proof of divine wisdom, and that their efficacy is weakened instead of being confirmed by needless iteration. It is enough if a writer, on a subject full of these proofs, presents them first apart from each other, and then in combination, in clear, plain and unaffected language, to the understanding of the reader, and

contents himself with a general but forcible impulse towards the conclusions respecting their causation, which have forced themselves upon his own mind. A work of this kind, executed as it ought to be, would be a foundation for a just reputation to its author, and for a more durable one than can be raised by any abstract of the state of technical chemistry, which however well executed at the time, must soon be rendered obsolete by the rapid march of discovery, while the great and leading principles of chemical philosophy will stand unimpeached and unchanged landmarks to guide those, who are in search of truth. There would too, I think, be great utility in such a work, because independently of all such tendency as that to which I have alluded, it would place the reader on a station from whence he might enjoy a distinct view of the surrounding world, of that world with which he is brought closely into contact, and with which he is every hour conversant, but whose most beautiful arrangements he passes unheeded by. What a wide field of phenomena, for instance, admit of explanation by the laws respecting heat;—the effects of its expansive power both on bodies themselves, and in rendering them its vehicles to distant regions, borne on the waters and the air, which envelope

our globe—the influence of the provision of latent heat in retaining it in great storehouses, where it is felt only for good and from whence it issues in continued and vivifying abundance when the sun withdraws his warmer beams—all that relates to the radiation of caloric through infinite space, and its reception by the subjects of the mineral, the vegetable, and the animal kingdoms;—the admirable contrivances especially, by which the latter are cheered and animated, without injury even to the most delicately organized. Surely these are topics (and they are but a very small portion of the whole) on which no man can expatiate without that pure delight, which truth first breaking through ignorance or error, sheds over the mind, refining and exalting both our moral and intellectual natures.”

The other literary project, for which Dr. Henry had also collected some materials, was a history of chemical discovery from the middle of the last century, and devoted in largest measure to the glorious epoch of Scheele, Cavendish, Black, Priestley, and Lavoisier. As the historian of his favourite science, it was Dr. Henry's design to have pursued the method so successfully traced by Sir James Mackintosh in his

invaluable dissertation on Ethical Philosophy—that of developing the progressive advances of the science through the lives and triumphs of its most eminent cultivators. The biographical notice of Dr. Priestley, made public in the first volume of the Reports of the British Association, was to have formed one of this gallery of historical portraitures. Such objects, and especially the calm retrospect of the advances of knowledge, and the deliberate estimate of the services of genius, Dr. Henry conceived to be the appropriate employment of advancing years, which, while they chill the active energies of invention and creation, ripen the judgment and incline to contemplative habits, to which they minister the accumulated materials of past study and experience. The evening of life, he often remarked, was far from ungenial to maturity or even vigour in composition, and he readily assented to the similar sentiments so eloquently enforced by Sir James Mackintosh, when characterizing the autumnal fruits of Mr. Stewart's genius. It is matter of deep regret, that Dr. Henry was not permitted to execute this great design; for, as a writer, it may safely be pronounced that he was never more happy than in his power of discriminating the finer intellectual distinctions, and of painting vivid yet not overcharged men-

tal resemblances. Maintaining an enlarged communion with all orders of intellectual greatness, and an enthusiastic worshipper of genius in all its manifestations, he delighted in thus offering to it his fervent homage, and in giving worthy expression to the intenseness of his feelings and convictions, and to the ardour of his sympathy in every discovery, that promised to advance the well-being of mankind, and to further the cause of universal truth and science.

To the members of a Society, who as a body have already placed on record their affectionate respect for his memory, and with some of whom he had maintained throughout life, an unbroken friendship, cemented by kindred tastes and mutual esteem, it can scarcely be necessary to offer any detailed portraiture of his moral excellencies. Yet there were some traits rather of manner than of character, which by those not in habits of close intercourse with him, might not perhaps have been always rightly interpreted. Thus there was occasionally a reserve of manner that might be regarded as implying coldness of feeling, but which arose solely out of the languor produced by an almost constant

state of bodily indisposition, and increased by those habits of studious application from which he could never be induced to relax. Though not liable to acute maladies or to such as seemed to endanger life, he had to struggle with what is perhaps less supportable, an habitual infirmity of health and feelings of oppression arising from the slow and imperfect action of the digestive functions. These distempered sensations he was accustomed to lament, mainly as abridging his season for intellectual labour, and especially as disqualifying him for original thought and composition.

In the general intercourse of society, Dr. Henry was distinguished by a polished courtesy, by an intuitive propriety, and by a considerate forethought and respect for the feelings and opinions of others;—qualities issuing out of the same highly-toned sensibility, that guided his tastes in letters, and that softened and elevated his whole moral frame and bearing. His comprehensive range of thought and knowledge, his proneness to general speculation in contradistinction to detail, his ready command of the refinements of language, and the liveliness of his feelings and imagination rendered him a most instructive and engaging companion. To

the young, and more especially to such as gave evidence of a taste for liberal studies, his manner was peculiarly kind and encouraging. He was most anxious to promote, as far as was in his power, their progress in knowledge, and on one occasion cheerfully dedicated a considerable portion of time to initiate some young friends in those more refined operations of analysis in which he was so consummately skilled.

From this imperfect record of Dr. Henry's original labours in science, and of his tastes in letters and in philosophy, a more faithful impression of his intellectual habitudes and endowments may perhaps be gathered, than from any general mental analysis. In science, it will have appeared, that his efforts are mainly characterized by ingenuity and elegance in devising instruments and methods of research, and by extreme skill and precision in their employment. But in measuring the amount and importance of Dr. Henry's contributions to chemical knowledge, it must be borne in mind that in his season of greatest mental activity, he never enjoyed that uncontrolled command of time, and that serene concentration of thought, which are essential to the completion of great scientific

designs. His intellectual seedtime was encroached upon by the duties of an extensive medical practice, and by other equally pressing avocations, and his experimental enquiries were conducted at late hours or at intervals snatched from engrossing pursuits and with the liability to constant interruptions. In more advanced life, when relieved from such exertions, growing infirmities and failing bodily power restrained him to studies not demanding personal exertion, and even abridged his season of purely mental labour. That amid circumstances so unfriendly to original and sustained achievements in science, he should have accomplished so much, bears testimony to that energy of resolve, that unsubdued ardour of spirit, which ever glowed within him, urging him steadily onwards in the career of honourable ambition, and prompting exertions more than commensurate with the decaying forces of a frame that had never been vigorous.

Though, moreover, the science of chemistry undoubtedly held the highest place in Dr. Henry's sphere of knowledge and interest, any measure of the strength and compass of his mind, which should rest simply on his chemical acquirements and discoveries, would be emi-

nently inadequate. In forming such estimate, it is essential to his just intellectual station, that regard should be had to the soundness and extent of his knowledge in various branches of physical and natural science, in the advancement of which he had no design of actively participating, and to which he was attracted by no other motive, than the delight he experienced in the varied exercise of his faculties, and in the perception of new truths. Nor would it be just to overlook his rare endowments as a philosophical thinker and writer, the clearness and fidelity with which he assembled and methodized the scattered fruits of discovery, and the simplicity and vigour which characterize his exposition of general doctrines. It would appear, indeed, from some slight notices of his early occupations, which are still preserved, that, at the very outset of his career, he had projected a scheme of study remarkable for its comprehensiveness; having probably, even then, arrived at the conviction, that an equable development of the various faculties, active as well as speculative, is most conducive to sound mental discipline and to individual well-being; and that a commanding survey of the kingdoms of nature, and enlarged sympathies with the creations of human thought and genius, are wisely pur-

chased by the sacrifice, if necessary, of a somewhat higher degree of excellence in a single department of knowledge.

In conclusion, it may be permitted to one so near to him in blood and in affection, to indulge the conviction, that faculties so vigorous and excursive, so amply furnished with materials for the illustration and enforcement of truth, might, had they been repositied in a less frail tenement, have raised some enduring memorial of their compass and energy ;—if dedicated to the history of science, impartially weighing and recording the services of individual minds, yet with vigilant and subordinate reference to the general intellectual movement of each epoch ; from which even genius itself derives its primitive impulse if not its special direction ;—or if aspiring to trace the footsteps of design in the Economy of Nature, ascending from the loftiest generalizations and most comprehensive laws to the contemplation of the Great Fountain of all truth and of all science.

The writer has been permitted by the President and Council of the Literary and Philosophical Society, to add the following extract from the minutes of the society.

“At the Quarterly Meeting of the members of the Literary and Philosophical Society of Manchester, held October 21st, 1836; it was moved by Dr. Holme, seconded by George W. Wood, Esq., and resolved unanimously, ‘That a Special General Meeting of the members of this society be convened without delay, to consider the most desirable method of testifying their respect for the memory of the late Dr. Henry—their profound sense of the benefits derived by the society from his many valuable communications, and from his services, during a long period of years, as Secretary and Vice-President—their high estimation of the distinction which his name as a man of science conferred on the society—and their grateful recollection of the urbanity and kindness, with which he presided at their meetings, shared in their discussions, and promoted both in this society, and on all other occasions the interests of literature, science, and the arts.’

“At a Special General Meeting summoned, in conformity with the foregoing resolution, on November 2nd, it was resolved, that application

be made to Sir Francis Chantrey to execute a bust of the late Dr. Henry, to be placed in the Philosophical Society's apartments, provided the means should be found to exist of obtaining a likeness, and the committee be appointed to make the necessary enquiries of Sir Francis Chantrey, and to report the result of the conference to a future meeting of the society.

“ In consequence of this resolution, a correspondence was opened with the distinguished artist alluded to, which terminated in his offering to undertake the execution of the bust on terms, the most honourable to his own feelings, and to the lamented memory of the deceased, and which drew from the society an unanimous expression of its most cordial thanks.

