Technical and Bibliographic Notes/Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- [ ] Coloured covers/ Couverture de couleur
- [ ] Covers damaged/ Couverture endommagée
- [ ] Covers restored and/or laminated/ Couverture restaurée et/ou pelliculée
- [ ] Cover title missing/ Le titre de couverture manque
- [ ] Coloured maps/ Cartes géographiques en couleur
- [ ] Coloured ink (i.e. other than blue or black)/ Encre de couleur (i.e. autre que bleue ou noire)
- [ ] Coloured plates and/or illustrations/ Planches et/ou illustrations en couleur
- [ ] Bound with other material/ Relié avec d'autres documents
- [ ] Tight binding may cause shadows or distortion along interior margin/ La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure
- [ ] Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/ Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.
- [ ] Additional comments:/ Commentaires supplémentaires:

- [ ] Coloured pages/ Pages de couleur
- [x] Pages damaged/ Pages endommagées
- [ ] Pages restored and/or laminated/ Pages restaurées et/ou pelliculées
- [x] Pages discoloured, stained or foxed/ Pages décolorées, tachetées ou piquées
- [ ] Pages detached/ Pages détachées
- [x] Showthrough/ Transparence
- [ ] Quality of print varies/ Qualité inégale de l'impression
- [ ] Includes supplementary material/ Comprend du matériel supplémentaire
- [ ] Only edition available/ Seule édition disponible
- [ ] Pages wholly or partially obscured by errata slips, tissues, etc., have been refilmed to ensure the best possible image/ Les pages totalement ou partiellement obscurcies par un feuillet d'errata, une pelure, etc., ont été filmées à nouveau de façon à obtenir la meilleure image possible.

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X		12X		14X		16X		18X		20X		22X		24X		26X		28X		30X		32X
											✓											

The copy filmed here has been reproduced thanks to the generosity of:

Seminary of Quebec
Library

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche shall contain the symbol ⟶ (meaning "CONTINUED"), or the symbol ▽ (meaning "END"), whichever applies.

Maps, plates, charts, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left hand corner, left to right and top to bottom, as many frames as required. The following diagrams illustrate the method:

L'exemplaire filmé fut reproduit grâce à la générosité de:

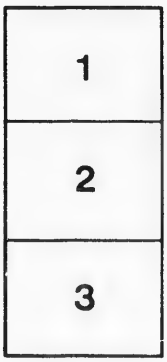
Séminaire de Québec
Bibliothèque

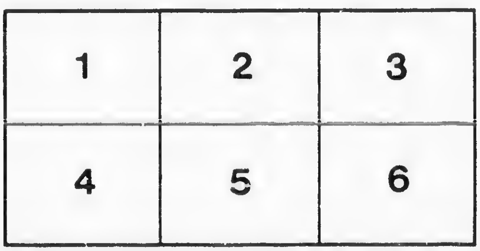
Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaîtra sur la dernière image de chaque microfiche, selon le cas: le symbole ⟶ signifie "A SUIVRE", le symbole ▽ signifie "FIN".

Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.





[TRANSACTIONS OF THE AMERICAN INSTITUTE OF MINING ENGINEERS.]

BIOGRAPHICAL SKETCH OF THOMAS STERRY HUNT.

BY JAMES DOUGLAS, NEW YORK CITY.

(Lake Champlain, Plattsburgh, Meeting, June, 1892.)

No one will attribute it to the partiality of friendship if I claim for Thomas Sterry Hunt the right to a place among that little band of men whom nature has endowed with what seems an almost magical power of insight into her mysteries. But those of us who knew him well, while we never ceased to wonder at the breadth of his genius, the fertility of his imagination, and the wonderful capacity of his memory, learned that these native powers would have availed little to win him his rank in science, had they not been stimulated by ceaseless mental activity, indomitable perseverance, and unflagging industry.

Thomas Sterry Hunt was born in Norwich, Connecticut, on September 5, 1826. He came on his mother's side from that good old stock which gave to Puritan England the gentle mystic Peter Sterry and that uncompromising preacher Thomas Sterry, who wrote the notable tract, "The Rot among the Bishops" in 1667, and that gave to New England Consider and John Sterry, the mathematicians.

While he was a child the family moved to Poughkeepsie on the Hudson. There the father died when Thomas, the oldest son, was twelve. The mother and her family of six young children returned to the old home in Connecticut. For a short time Thomas attended the public school; but it was for a short time only, as he, thus early, was required to share the burden of the family support and to seek employment. This he found first in a printing-office, then with an apothecary, afterwards in a book-store. The surroundings may have been congenial, but the occupation probably was not; for he remained only six months in each situation. His next, though less attractive, proved more fortunate. It was a clerkship in a country store, where business was not brisk and whose owner was not exacting.

At that time his intention was to study medicine. Under the counter he kept a skeleton, as well as his home-made chemical apparatus. The anthracite stove was his furnace. Two local physicians assisted the brilliant boy, thus educating himself, by the loan of books. But, though a learner, his originality asserted itself; for with such a laboratory he made investigations into the properties of hydriodic acid, which to a certain extent forestalled those of Deville; and it is a popular tradition in Norwich that he was the author of certain improvements in dying and dyestuffs, which are still practiced and used in the mills near by.

In 1845 he went to New Haven during the meeting of the Association of Naturalists and Geologists, the precursor of the present American Association for the advancement of Science, and obtained work as a reporter on a New York paper. But a more important issue of this trip was a visit to the elder Silliman, whom the boy had already met in Norwich, after one of the professor's lectures. Struck by his precocious proficiency in chemistry and mineralogy, Professor Silliman facilitated his admission into Yale. Ere long he became paid assistant to Professor Silliman, Jr., who was then making an extended series of water-analyses, in which Hunt aided him, and was admitted a member of his household. The struggle for a livelihood had ceased.

While at Yale, between his eighteenth and twentieth years, he contributed eighteen papers to Silliman's *Journal,* and wrote the Organic Chemistry for Silliman's *First Principles.* In the preface to the first edition published December, 1846, Professor Silliman acknowledges the aid rendered by his young colleague, as follows:

"The author takes pleasure in acknowledging the important aid derived in this portion of the work from his friend and professional assistant, Mr. Thomas S. Hunt, whose familiarity with the philosophy and details of chemistry will not fail to make him one of its ablest followers. The labor of compiling the Organic Chemistry has fallen almost solely upon him."

When Dennison Olmstead, Jr., resigned his post as chemist on Prof. C. B. Adams's Geological Survey of Vermont, to fill a similar office in the Canadian Survey, Hunt received the vacant appointment on the Vermont staff. Olmstead soon returned from Montreal to die, and Hunt again succeeded him. In February, 1847, he entered on his duties as Chemist and Mineralogist to the Geological Survey of Canada, and took possession of that small study, and still smaller bed-room, opening, off the laboratory in St. Gabriel Street, Montreal, where for so many years he, without any laboratory assistant, not only did the routine analytical work of the Survey, but made those experimental investigations in the "Chemical Geology" which afford a rational explanation of the formation of the older crystalline rocks.

His literary activity was prodigious, as evinced not only by the scope but by the number of his communications, among others, to Silliman's *Journal* (in the 2d series of this journal seventy-six articles appear under his signature), the *Canadian Naturalist*, the *Philosophical Magazine*, the *Transactions* of the Royal Society, the French Academy of Sciences, the *Proceedings* of the American Association for the Advancement of Science, and the Report of the Canadian Survey. His strictly official work as chemist and mineralogist would have been more than enough for most men; but he supplemented it by spending several months of each year in the field, and by assisting his chief, Sir William Logan, in the literary and administrative work of the survey.

Every year from 1856 to 1862, he spent the spring months in Quebec, lecturing on chemistry in the French language before the University of Laval; and for four years he filled the chair of applied chemistry and mineralogy in the McGill University of Montreal.

He severed his connections with the Geological Survey of Canada in order to accept the professorship of geology at the Massachusetts Institute of Technology, where he lectured from 1872 to 1878.

He was a juror at the Paris International Exposition of 1855 and 1867, and at the Philadelphia Exposition of 1876, and was an official representative of the Canada Geological Survey at the London Exposition of 1862.

His eminence in science was early recognized by his election in 1859 as a Fellow of the Royal Society of London, where for some years he enjoyed, I believe, the distinction of being the youngest Fellow. Early in his career, Harvard conferred on him the degree of M.A., and Laval that of LL.D. In 1881 the University of Cambridge, England, honored him with the latter degree, assigning him, on the occasion of his visit, as a guest-chamber, quarters near the very room occupied by Newton. There and at that time, he wrote part of his splendid essay on "Celestial Chemistry from the Time of Newton," under the influence of the place, if not of the spirit, of the immortal philosopher. He was a member of the National Academy of Sciences, was acting president in 1871 of the American Association for the Advancement of Science, and President in 1877 of our own Institute. He was first president by election of the Royal Society of Canada, and held office at every meeting of the International Geological Congress which his health permitted him to attend. His influence at these important conferences was heightened by his perfect familiarity with the French language, in which he could converse and lecture, even on the most abstruse themes, with as much ease and elegance of diction as in his mother tongue. The list of home and foreign societies which enrolled him on their honor-list would fill a page.

The government of France, in 1855, made him a Chevalier of the Legion of Honor, and subsequently conferred on him the higher rank of Officer of the same order. King Humbert decorated him with the order of St. Mauritius, and St. Lazarus after the Geological Congress of Bologna.

What he considered his most important contributions to science up to 1886, he embodied in two volumes, *Chemical and Geological Essays*, first edition published in 1874, second edition in 1878, and in his *Mineral Physiology and Physiography*, published in 188[illegible] His mature views on the nature and effects of chemism he publi[illegible]d in 1887 under the title of *A New Basis for Chemistry*, and [illegible]plied the same principles to mineralogy in his latest work, *S[illegible]matic Mineralogy*, based on a natural classification publishe[illegible] 1891.

The only other book bearing Hunt's name was the special report on the *Trap Dikes and Azoic Rocks of Southeastern Pennsylvania*, published in 1878 by the Second Pennsylvania Survey.

From this incomplete sketch of his tireless and many-sided activity, we can form some idea of his learning and of his industry. He never knew what it was to be idle, and never wasted his power on irrelevant and desultory work; and thus he became the master of many sciences. He was a good mathematician. Although not himself a profound physicist, he was able to appreciate the more recondite results of modern physical investigations. He felt so keenly those ineffable affinities which bind every energy in nature to one central force, and had such a lofty conception of the interdependence of the laws of the universe and of the harmonious blending therefore of chemistry with physics, that he considered that a philosophical chemist must be a physicist, and that no physicist can be fully equipped without a knowledge of chemistry.

He was not fond of animals, and his dislike of living species betrayed itself in indifference to natural history and paleontology. But flowers he loved, almost passionately. He would fondle the leaves of a favorite plant with as much affection as if it were sensible of his devotion. To him botany was not merely a study of names, though his memory revelled in its accurate knowledge of the divisions and subdivisions of the vegetable kingdom, but an appreciative, almost sympathetic, acquaintance with the habits, the uses, the preferences, the beauties, the very deformities of every tree and plant that grows.

As a geologist, Hunt's original work, whether in the field or in the laboratory, was done among the crystalline rocks. He was appointed, as we have seen, chemist and mineralogist of the Geological Survey of Canada in 1848 and entered on his duties in 1849, when he was a youth of only twenty-one years of age. He thus received his geological training from its director, Sir William E. Logan, and his text-books were the Azoic rocks to the north of the lakes and the St. Lawrence, and the Palæozoic rocks of southeastern Quebec. Sir William was one of the founders of stratigraphical geology. He was not a chemist or an acute mineralogist. Hunt, therefore, even in those early days, supplemented his chief's deficiencies, and brought to bear on the intricate problems that had to be unravelled not only his wealth of knowledge but his vivid imagination. How much is due to Logan and how much is due to Hunt, of the brilliant work of the early Canada survey, it would be invidious to try to determine. They worked as partners, each contributing his share to the common stock. Logan supplied out of his fund of life-long experience that intuitive appreciation of geological stratigraphical sequence which he possessed to such an eminent degree. Hunt contributed out of his store of chemical and mineralogical knowledge, and from his laboratory investigations, the facts and hypothetical deductions which gave as conclusive probabilities to the life-study of those older barren strata as the evolution of vegetable and animal organism gives to the history of later rocks.

In the literary work of the first series of Canada Geological Reports they were, in a sense, collaborators. Logan was a most painstaking writer. He hammered at his words and sentences, till they expressed his exact meaning, as laboriously as he used his geological hammer in eliciting from the rocks the facts they had to tell; but Hunt usually revised all the literary work of the Survey. The purely geological memoirs were Logan's, the mineralogical and the economical were Hunt's. But as years wore on and Sir William became infirm, Hunt did more and more field-work, and identified himself more intimately with the geological section of the Survey. The result was that he acquired the experience of a working geologist, and that tact which enabled him afterwards, in the wider range of his observations in this country and in Europe, to recognize rock-resemblances and differences with the keen appreciation which only long work in the field confers. He thus combined in his intellectual stock the practical experience of a field-geologist with a theoretic erudition in geology and allied science, such as few of his fellow-workers could claim possession of. He was therefore warranted, as the area of his geological view grew, in shifting his ground on certain subordinate points. The most notable instance of such a change of position was that taken in his address as retiring vice-president, acting for the absent president, before the American Association of Science, in 1871, at Indianapolis, when he subdivided into six groups the primary and crystalline rocks which had previously been classed as Laurentian and Huronian, and altered the stratigraphical relations of what was known in the Canada Survey as the Quebec group. Whether the subject was important enough to warrant the vehemence with which he maintained his ground and sustained his arguments is quite another question; but to Hunt truth was truth, and facts, as he saw them, were facts, and the relative proportion and importance of the truth and the facts had no weight with him. Compromise, perhaps, should be as impossible and ignoble to the man of science as to the theologian. Each follows an infallible guide and may not dally with expediency or weigh unessentials against essentials. What is right and true must be maintained; what is wrong and false must be opposed; and therefore to the thorough-going geologist the exact position of a palæozoic stratum whose displacement in the geological series makes not a whit of difference to any man, woman or child, dead or alive, becomes as momentous a matter of dispute as the most vital question in politics or sociology to another class of thinkers. It is well that it should be so, as long as zeal does not breed acrimony, or difference of opinion sever friends. Hunt, perhaps unfortunately, had always so profound a conviction of the accuracy of his facts and of the infallibility of his deductions that he was too unyielding in argument; but if posterity reads the facts of nature as he saw them, and accepts his conclusions, his intolerance will be accounted only stern adherence to truth.

It is not on his work as a stratigraphical geologist that his fame will mainly rest; but on his achievements in lithology and chemistry, and on the broad generalization which he drew as to geogenic growth. There are essays in his second series, elaborating his crenitic theory, which rise to a high pitch of eloquence, and which any one of literary tastes, though utterly ignorant of science, will read with rapt enjoyment. In them he discusses the origin of our earth, and describes the primeval globe and its atmosphere, the agencies, chemical and meteorological, through whose operations were built up out of the primal world-matter the primitive rocks which now everywhere cover and conceal it, and the forces, at the same time destructive and constructive, by which these in their turn are being decomposed and rearranged. His description of this wonderful evolution, as it appeared to him, is an epic which only a man of the widest and profoundest scientific knowledge, coupled with the imagination of a poet and the literary skill of a trained writer, could have conceived and expressed. Last year, after completing his *Systematic Mineralogy*, and when so feeble that he could only move from his bed to his desk, he commenced a book entitled *The History of an Earth*, in which it was his purpose to expand, in a connected treatise, his splendid generalizations on stellar and telluric chemistry, and especially to trace the influence of water under heat and pressure, in decomposing the basis-rock of our globe, and in creating out of the primary elements the older crystalline rocks, and again in re-creating from their sterile ashes, through decay and death, the newer life-supporting and life-entombing strata which contain, written in generation after generation, the newer history of the earth. But death frustrated this and other literary projects.

Chemistry was Hunt's first love; and he never deserted her. When he studied geology, his impulse was to seek below the visible results of mechanical causes for the all-pervading chemical forces and agencies which, by disassociation and combination, by integration and disintegration of elemental matter throughout all space, are building up other worlds, as they built up ours. His lithological researches were made not with the microscope, but in the chemical laboratory; and in his system of mineralogy, neither outward resemblances nor similarity of crystalline structure, nor possession of common elements, but the relation of hardness to condensation and the further relation of these qualities to chemical indifference, constituted the basis for his classification of mineral species. Whether amidst such a multitude of individual species he, in his first arrangement, assigned to each its proper place, may well be doubted, without questioning the substantial correctness of the principle on which his chemical and natural-historical classification of minerals rests. Yet it is impossible to follow, in his *Systematic Mineralogy*, the beautiful progressive series of quotients deduced from the formula $V = p \div d$ (v being the co-efficient of condensation; p the chemical equivalent, and d the specific gravity), as calculated for the species under each genus, without being convinced that Hunt heard and expressed one of those wonderful harmonies of which it is granted to but few mortals to catch the theme, amid the complexity and often apparent discord of nature's contending voices. A very few catch even an indistinct echo of one or another of the motives which dominate the symphonies of nature; but fewer still hear and apprehend them so clearly as to be able to write the score. The doctrine of the equivalency of volumes, as applicable to liquid and solid species, as well as to the gases, on which is founded Hunt's *Natural System of Mineralogy*, had dawned on his mind very early in his chemical studies; but its larger significance was revealed to him only toward the close of his life, when, though his physical strength was waning, his mental vision seemed to be gaining both clearer conception and wider range. To him the domain of chemistry was much wider than it had been held to be, under the old conventional theory, which drew such precise lines beween chemical and mechanical forces. Like most philosophical chemists of to-day, he regarded all solution as chemical union, and all chemical union as nothing else than solution. In his view all precipitation and all crystallization from solutions involve chemical change, and all chemical species may theoretically exist in a dissolved state, from which they pass into polymeric mineral species, often insoluble. Regarding the same substance in its different polymeric states, due to different degrees of condensation, as representing so many different chemical and mineral species, he, like other chemists, was driven to construct chemical formulas much more complex than those which satisfied the requirements of the Daltonian atomic theory as it had been previously understood; for, once volume is admitted to be as discriminating an element in chemical change as weight and condensation are in the expression of volumetric change, the enormous volumetric difference between gaseous and solid states of the same substance, or rather between a gaseous chemical species and a solid mineral species, involves for its expression the use of numbers which dwarf those assigned till recently to even organic compounds. In his *New Basis for Chemistry* (second edition), Hunt calculates the equivalent weight of water to be 21,400.3; and to the last he continued wrestling with the problem of the actual coefficient of condensation of each mineral and chemical species; liquid water at the point of condensation at standard pressure being taken as unity (1 : 21,400). This *New Basis of Chemistry* was to Hunt no longer theory but fact. He had believed for many years that the solid and liquid mineral species known to us are formed by processes of intrinsic condensation, or so-called polymerization, from simpler chemical species. He knew, with every chemist, that the determination of the co-efficient of condensation is a problem of the highest moment, a problem which had been neglected in the belief that it did not admit of solution. When, therefore, in 1886, he reached what he regarded as a solution of this unsoluble problem, and propounded the theorem that "the volume, not only of gases and vapors, but of all species, whether gaseous, liquid, or solid, is constant, and that the integral weight varies directly as the density," he rejoiced in the conviction that he had realized and expressed one of the great laws of nature, after which he had been groping all his life.

While throughout all his maturer years, he pondered over the deeper problems of pure science, he was also actively engaged in practical pursuits. The papers he has written on technical subjects would fill well-nigh as many volumes as his theoretical and purely scientific memoirs.

His name is intimately associated with the metallurgy of copper and silver. In the sixties he investigated the beautiful reactions between cupric-oxide, sulphur dioxide, etc. (calcic chloride) which were embodied in the Whelpley and Storer copper-process; and it goes without saying that to him are due the explanation and the expression in chemical formulae of the reactions of which advantage is taken in the Hunt and Douglas method, in the development of which, ~~at a later period~~, I had the good fortune to be associated with him.

Our *Transactions* and the reports of the Geological Survey of Canada bear witness to his mastery of the metallurgy of iron and steel; and no better proof could be afforded of his admitted familiarity with the iron-ore deposits of this country and of their geographical and geological relations, than the circumstance that he was considered, by common consent, the fittest person to describe them before American and foreign engineers, at their joint Pittsburgh meeting in 1890. His paper, prepared for this occasion, with its mass of information clearly arranged and lucidly expressed, was dictated during his last illness, when he was too feeble to write; and without access to other sources of information than those filed away in his wonderfully stored memory.

His memoirs and reports on salt and its manufacture; on the apatites of Canada; on the coal of Ohio; on petroleum and its origin; on the gold mines of Nova Scotia and on other kindred topics, each of which might serve as a comprehensive treatise on the subject discussed, testify to the wide range over which his knowledge extended and which his activity embraced.

Like most devotees of science, he was not very successful in turning his talents to pecuniary advantage. One suggestion, however, which he did make, when he proposed the application of sesquioxide of chromium as an indestructible non-actinic pigment to the manufacture of bank-notes, might have yielded him a fortune had he been politician enough to foresee the war, and anticipate the use to which this salt of chromium would be put in the manufacture of "greenbacks."

Most of us have listened to him as a lecturer, and admired the fluency, yet absolute freedom from superfluous verbiage, with which he poured forth from the recesses of his memory, facts and illustrations, or drew with unswerving accuracy and unfaltering precision intricate and erudite conclusions. Whether as an expert witness in court or as a lecturer, he never hesitated, yet never wandered in thought or language. His spoken style had become as faultless as his written; because on both he had bestowed infinite care.

Dr. Raymond in the issue of the *Engineering and Mining Journal* of February 20, 1892, in a most appreciative notice of his friend's life and work thus described Hunt's relation to our association:

"He joined the Institute in 1871, the first year of its existence, was manager in 1873, '74, and '75, president in 1877, and vice-president in 1888 and 1889. Some of his most interesting observations, and some of his most brilliant generalizations, may be found in the volumes of the *Transactions*. I may mention particularly his address on 'The Origin of Metalliferous Deposits' (*Trans.* i., p. 413), which was printed in his 'Chemical and Geological Essays,' and the history of which, as I happen to be able to furnish it from personal knowledge, offers a striking illustration of those features of Dr. Hunt's peculiar ability which I wish particularly to emphasize.

"It was during the first New York meeting of the Institute in May, 1872, that Dr. Hunt was requested to deliver a lecture before 'the Polytechnic Association of the American Institute,' a local society. It was afterwards arranged that this lecture should be published as a part of the *Transactions*, though not delivered, strictly speaking, before the Institute of Mining Engineers. The fact was, that we could not afford to do without it. Yet, according to my recollection, it was an improvised generalization, representing, out of the fullness of the speaker's knowledge of the subject and its history, such a lucid, logical, comprehensive and consistent view as few other men could have framed.

"On several later occasions I had the opportunity to witness similar intellectual feats. I remember when, at the Philadelphia meeting of 1878, Dr. Hunt (being then the President of the Institute) was suddenly informed that, by reason of some failure in the arranged programme, he would have to open an evening session with something in the way of an address. He was at dinner when he received this announcement; and could not have had ten minutes of preparation before the session began; but the exquisitely clear and suggestive address on 'The Chemistry of the Atmosphere' (reported, in substance only, in vol. vi. of the *Transactions*) could not have been improved by any amount of preliminary labor. A similar occasion occurred during the next meeting, held at Chattanooga, when a party gathered on a projecting cliff of Lookout Mountain, called upon Dr. Hunt to describe the geology of the scene spread out at their feet.

"That fascinating address was never published—more is the pity."

Like most men of genius he had his eccentricities; and like all men of highly sensitive, poetical temperament, he was subject to accessions of undue elation and undue depression, which he occasionally expressed with a vehemence and lack of reserve giving to casual observers a false impression of his true character. He was, in reality, as sincere as the sunlight, as generous as nature, and as true as steel. Those who knew him best admired him most; a statement which cannot be honestly made of many men as highly gifted as he was.