

THE ARENA¹⁰⁴⁴⁸

EDITED BY B. O. FLOWER

VOL. XXXVIII.

JULY TO DECEMBER

212 TO 217



ALBERT BRANDT: PUBLISHER

TRANTON, N. J., AND BOSTON, MASS.

1907

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and for the public to go and worship at the Shaw Memorial and then turn about and feel how chilling is sculpture that has no soul.

Mr. Saint Gaudens made great sculpture possible in America because he made it himself. He set an example of industry and sincerity that will last through all our history, and the feeble intellects who assume to occupy his place will find that they can not destroy and tear down to their own level for jealous reasons, but if they live at all they must live up to his high ideals and honorably seek to surpass them.

The Shaw Memorial cost the sculptor nearly twice what he received for it in

money; yet so brightly burned the fire of true genius that the group went on to place the stamp of truth upon the greatest work in sculpture of modern times.

How much it cost of time and sacrifice no one may know, but the result stands to-day as a living example of the splendid individuality of the man.)

He knew full well that if he was true to his own ideals he would be true to his own race and time.

FRANK EDWIN ELWELL,

In grateful memory of a true friend, who was not afraid to be a friend in adversity

Weehawken, N. J.

THADDEUS S. C. LOWE: ONE OF AMERICA'S GREATEST INVENTIVE GENIUSES AND BENEFACTORS.

BY GEORGE WHARTON JAMES.

SEVENTY-FIVE years ago there was born at Jefferson Mills, now known as Riverton, New Hampshire, a boy whose future life was little dreamed of by those who heard his first baby cry. There were other children in the family and the parents were poor, yet the mother found time to read something of the better literature of the time, and she had been thrilled with Jane Porter's interesting novel, *Thaddeus of Warsaw*, shortly before the birth of her boy. Who knows what dreams the sensitive mother heart had for her unborn child? Who knows what ambitions stirred within her as she asked herself what her child should be? And with a mother's pride and a mother's ambition she daringly gave to the tiny creature of pink flesh that had so recently come to her arms the high-sounding name of Thaddeus Sobieski Coulincourt. Two were great patriots and great military heroes. How

foolish her neighbors must have thought her! "How absurd the triple and heavy name with which she has weighted down her son," the more learned doubtless exclaimed; and yet it is no figment of the imagination to assert that Thaddeus Sobieski Coulincourt Lowe grew up to benefit and bless more people by far than did both of the historic heroes whose names he bears.

When quite a lad, Lowe's father died. As the family was large the mother was required by the selectmen of the town to do what was quite common in those days, viz., sell out the services of her son for a certain period to whoever would care for him. The man who bought Thaddeus' services was rough and rude, and he treated the lad so harshly that he determined to run away. Not far from where the noted Waumbek hotel now stands is the cottage from which he fled and outside was a pile of

stones upon which he sat with his bosom friend, Nathan Perkins—one of New Hampshire's most distinguished sons—and declared his intention. How the two lads clung to each other. What a desperate and daring undertaking it seemed. Yet in the night it was done, and the poor lad, with but a few cents in his pocket, trudged through the clearing, out onto the Portland road, determined to make his own fortune. It was not long before it came. Studious as a child, he had watched the clouds play about Mt. Washington and the other peaks of the Presidential range. He had felt the differences of the breezes of summer and winter; he had experienced the muggy heat of one day, followed by the cool, delicious breezes of the next. The why and wherefore of these things bothered him. He was a born interrogation point—a searcher for the truth—and he was born with the tireless energy of Thaddeus of Warsaw, the daring resolution of Sobieski, and the cool, logical brain of a Roman conqueror. So he set to work to find out. But how could he tell of the movements of the air-currents if he remained on the ground? Then he would ascend! But how? In a balloon. Whence could he secure the funds? By balloon ascensions. So he



Photo. by Steckel, Los Angeles, Cal.

PROFESSOR LOWE AND MRS. LOWE AT 50TH ANNIVERSARY
OF THEIR WEDDING, FEBRUARY 14TH, 1905.

blossomed out into an aëronaut. One of his first friends and helpers was Tilly Haynes, the well-known hotel man, who then lived in Springfield, Massachusetts, and who said: "Come to Springfield and give us an ascension on the Fourth of July and we 'll pay you well."

On the strength of the promises of friends he went ahead, constructed a fine balloon and prepared for the ascension, which was a complete success.

Others followed in rapid succession. He was making a name for his daring and his ability; but he cared nothing for that. *He* was learning. His ascensions were not made for glory; they were for study. Long before the applause of the giddy and excited crowds below had left his ears he was taking careful note of the air-currents through which he passed, and the direction other currents were flowing.

Scientists soon began to learn what he was after. His ideas were new and novel. He scouted the thought that we were compelled to remain in ignorance of the weather until it came. He ventured the bold assertion that the time would come when the government of an enlightened country like the United States would soon inform the people of the respective sections what kind of weather they might reasonably expect for the following twenty-four or forty-eight hours. He was laughed at, of course, as a visionary, but other and wiser men further questioned the studious youth with the far-seeing eyes, and listened in amazement as he outlined the possibilities of what he conceived to be the duties of the United States in this regard. And in later years, when his ideas were taken in toto and out of them was formulated the United States Weather Bureau, then the scoffers began to realize as scoffers have always realized when too late—that any fool can scoff, but it takes a wise man to listen and heed.

Among the wise men who heeded Lowe's ideas was Joseph Henry, the greatest American scientist of his day, and then Secretary of the Smithsonian Institution. Lowe was certain that at a certain distance above the earth an air-current would be found that invariably flowed eastward, no matter how the surface currents were blowing. To thoroughly test this he built the largest aërostat ever constructed. It was 150 feet perpendicular diameter, by 104

transverse diameter, the upper portion being spherical. When fully inflated with hydrogen, its atmospheric displacement amounted to a lifting force of twenty-two and a half tons. For its outfit were provided, in addition to the car, all the necessary scientific instruments and a Francis metallic life-boat, schooner-rigged, so that all reasonable precautions would be taken against accident. The gas envelope weighed over two tons, and the net-work and cordage added another ton and a half, while the extra outfit and passengers brought the total weight up to over eight tons.

A practical purpose for the use of this balloon was the bringing of speedy news of the markets of Europe to this country, for it will be remembered that the Atlantic cable, though laid in 1857, was practically useless until 1866.

Professor Henry, however, was not willing to allow Professor Lowe to risk his life on this trans-Atlantic trip until he had first demonstrated the existence of the eastern air-current. He practically said: "Why can't you build a smaller balloon, and when all the surface currents are blowing *westward* make an ascension? Then if you come *eastward* for any long distance, we shall be reasonably certain that this eastern current exists, and I will then further your plans all I possibly can."

No sooner suggested than done. Professor Lowe built a balloon, went to Cincinnati and waited for telegraphic reports that should tell when all the surface winds were blowing westward. When the news finally came, he was at a banquet, in full dress clothes, and with a high silk hat. Yet such was his enthusiasm and delight at being able to go that he would not wait to change his clothes, but dressed as he was, made the ascent. Murat Halstead, the distinguished editor of Cincinnati's leading newspaper, wrapped up a jug of hot coffee for him in a blanket, and amid the shouts of his



friends, the balloon, which had been kept in a state of perpetual readiness, was cast loose and rose into the heavens. All the newspapers chronicled the event and laughingly stated that when this balloon, which had made the ascent for the purpose of demonstrating the existence of a perpetual eastern air-current, was last seen, it was rapidly moving *westward*. Yet, had the humorists looked a little longer and seen the balloon ascend higher, they would soon have witnessed a change. It was not long before—as Professor Lowe was assured—the balloon struck the eastern current and he began to travel rapidly towards the Atlantic. What a journey that was. Over a mile in the blue of the heavens, the silence of night surrounding him, and, though traveling at so great a rate of speed, the motion of the balloon and of the air was so harmonious that he was able to read with an uncovered candle in his hand. In eight hours he had crossed the Alleghenies, and, seeing the ocean in the distance he landed in South Carolina. It would take too long to tell of the peculiar and thrilling experiences Professor Lowe passed through at this time. The war of the rebellion had begun, Fort Sumter had been fired upon; and he was taken for a spy, captured and guarded as a prisoner. He came near being hanged without ceremony. At last he persuaded his captors to take him to Columbia, where he was known as a scientist and duly released. Hence it can safely be said that he was the first prisoner of the Civil War.

Now President Lincoln sent for him, and in a short time he had organized the United States Balloon Corps and was making daily and hourly ascensions for the purpose of watching the movements of the enemy below. He invented methods of making gas so that he could speedily fill his balloon when movements in the field were required. He invented and put into constant operation a means of telegraphing from the balloon when in

the air, to the headquarters of his general, and also to Washington. The good service he rendered the government during the war has been nobly recognized and it was owing to that service that the Loyal Legion elected him an honorary member of its distinguished fellowship.

It is also undoubtedly owing to the impetus he gave to the use of the balloon, and the practical methods of its application that he invented and set in operation, that has led to the great advancement in the airship, the one being the natural forerunner of the other.

Before the close of the war, ill health, caused by exposure, compelled Professor Lowe to resign his work and leave it in the hands of the subordinates he had trained. For a while he retired to a farm in Pennsylvania, but his active mind allowed him to take no mental rest. During his period of recuperation he invented and patented a machine for making artificial ice by compression of gases. As soon as possible the plant was in operation. Everything worked perfectly and it is a wonderful tribute to his mechanical skill and foresight that the first machine thus made, with several others manufactured at the same time, are still in active operation, turning out their daily quota of ice.

This invention led to the sister one of an artificial refrigerating plant, and then to the equipment of a refrigerated steamer for the transportation of perishable meats, vegetables and fruits from Galveston to New York. I have before me now as I write one of the certificates of stock of this new company, launching a new business which was to have so important a bearing upon the food supply of the world. It is dated December 21, 1868. And from an article that appeared in the *New York Sun* at that time I quote the following:

“It is encouraging to note the practical efforts that are being made to obtain abundant and cheap supplies of fresh



LOWE MEMORIAL UNION CHAPEL, ERECTED ON THE SITE OF PROF. LOWE'S BIRTHPLACE.

beef, an article which ranks second in importance only to bread, in our cities and large towns. The forestallers and middlemen have such a control upon the cattle markets, that the most exorbitant prices are exacted from consumers, even when the supply from the West is large. This state of affairs has directed attention to the immense supplies of cattle in Texas, and to scientific methods of supplying Northern markets from that source. Experiments with refrigerator steamers, to which we have before directed attention, have recently been made between a Texas port and New Orleans with entire success. A lot of thirty head of cattle arrived at New Orleans, on the 10th inst., in the steamer 'Agnes,' which had been fitted up with refrigerating apparatus for the purpose, and came out in perfect order, looking as if freshly slaughtered, though killed five days be-

fore. The means used for preserving the beef is so effectual, that it may be shipped for long distances—to Northern as well as Southern ports. Arrangements are in progress for sending large quantities to Mobile and Havana. As before remarked, Texas abounds in beef cattle, thousands of which are slaughtered for their hides and tallow alone, and if this new process proves to be as successful as it now seems likely to, it will be a great step toward cheap beef.

"A very extensive beef-packing establishment has also been completed at Shreveport, Louisiana, by the gentleman who built the Communipaw abattoir across our harbor on the New Jersey shore. The plants, to slaughter and pack the Texas beef at the time when it is in the best condition for market; to employ the newly-invented refrigerator steamships, to bring the beef fresh to our

markets. Nearly the whole of each of these vessels is an immense refrigerator, kept cool by ice, made by the use of carbonic acid. Texas beef can be bought on the spot for about two cents a pound; and the hides, horns and tallow, it is estimated, will pay for slaughtering and transporting. We conclude that there is a fair prospect of an increased supply of fresh beef at materially lower prices than those now current here, which range from twenty to thirty-five cents per pound to the consumer."

But both these inventions were far ahead of their time. The world was not ready for them, and the inventor not only failed to realize his financial hopes from them, but was actually placed many scores of thousands of dollars in debt thereby. To most men this would have been a staggering blow, preventing further inventive activities. But not so to this sturdy son born and bred on the granite hills of New Hampshire. With energy and vigor all the keener because of the drawbacks and obstacles, he set to work to give the world an invention for which it was not only ready but waiting. For sixty-five years, since its first introduction, there had been no improvement upon the old, clumsy, wasteful and barbarous retort methods of making illuminating gas. Professor Lowe invented a process by means of which, by superheating the retort, water ejected therein was reduced to its gaseous condition. In this state the hydrogen was separated and properly treated so as to make a most powerful and brilliant illuminant. The cost of manufacture was reduced wonderfully, the labor of handling the plant was also reduced, and a far better product supplied to consumers. The invention immediately began to revolutionize the gas industry, and I was personally present at a banquet given to Professor Lowe in Philadelphia, and another in New York, where it was openly stated that he had made the fortunes of more men in the gas

industry than had been made by any other man in any profession then living. But while this is undoubtedly true, it is equally true—even more so—that the primary object of Professor Lowe's invention from the financial side has not been—as too often is the case—to add to the wealth of the capitalist. He has always strenuously worked for the benefit of the poor. By means of his gas inventions hundreds of thousands of the poor are using gas for fuel, for cooking and heating, who without them could never have afforded to do so. Think of the saving of labor by the use of gas. Fires do not have to be made, kindlings and wood split, the ashes, etc., removed. A turn of the wrist, the striking of a match, and all is ready, either for cooking the morning's meal or heating any room in the house. Gas to-day costs less than one-fourth what it did when Professor Lowe's first invention was given to the world.

Feeling the need of recuperation after his busy and arduous life, Professor Lowe now removed to California. Here the great peaks of the Sierra Madre range allured and attracted him, reminding him daily of the wonderful White Mountains of his boyhood home. He had visited them again and again in his manhood; had ridden up the wonderful Mt. Washington railway, and with these remembrances in his mind, he determined to make the peaks of the Sierra Madres as accessible as were the slopes and summit of Mt. Washington. Accordingly he built the Mt. Lowe railway, the first and only all electric mountain railway in existence. The great cable incline is 3,000 feet long and in some places has a grade of 62 per cent.,—that is, it rises 62 feet in elevation to every 100 feet it goes forward. A hundred thousand people during the last few years have enjoyed the marvelous scenery it discloses. Four hotels were built on this railway for the enjoyment of travelers and others; one at Rubio at 2,200 feet elevation, two on Echo Mountain at

3,500 feet elevation, and the fourth, Alpine Tavern, on the shoulders of Mt. Lowe, 5,000 feet above the sea.

Just above Echo Mountain he established at his own expense the Lowe Observatory and equipped it with an Alvin Clark refracting telescope, 16 inches in diameter. Dr. Lewis Swift, the eminent astronomer of Rochester, New York, was in charge for many years and is now succeeded by Dr. Edgar Larkin who is also well-known for his scientific attainments.

Readers of THE ARENA will remember that it was here, on Echo Mountain, that the beloved James G. Clarke, our poet of the people, wrote several of his most beautiful descriptive poems.

He was one of many poetic and literary friends of Professor Lowe, all of whom were entertained with generous hospitality in the hotels on this beautiful mountain.

For the past fifteen years Professor Lowe has been devoting all his time and energy to the last and crowning achievement of his life. It is most successfully accomplished, and that which it does is as marvelous as were the stories of the telephone, graphophone, wireless telegraphy, radium, etc., before they became common. By means of his new invention, which is a combined coke and gas oven, a million or more feet of gas (according to the size of the plant) may



Photo. by Steckel, Los Angeles, Cal.

PROFESSOR LOWE AND THREE SONS.

be made each day, as a mere by-product that costs nothing; and the coke that comes from this new oven, made by the new process, is so purely anthracite and so hard that it burns without a particle of smoke, is consumed entirely, and for metallurgical purposes such as the smelting of ores, is capable of bearing twice the weight of ore as is the ordinary coal coke.

The metallurgist will readily recognize the great advantage this coke affords over the old coke. The one cry in smelting ores is for a coke that will "hold up" the weight of ore that necessarily must be placed upon it while in the furnace. This "Lowe anthracite coke"



FIRING THE SALUTE OF SEVENTY-FIVE GUNS.

has an upholding strength that is marvellous, and the most refractory ores, requiring the greatest heat, can be easily and successfully reduced in a furnace fed by it.

But this is only one phase of his new invention. By a careful and studious arrangement—in which work Professor Lowe's peculiar genius manifests itself—a plant is secured which, under one roof and one management, and at scarcely more than the cost of operation of an ordinary gas plant, and at little more than the original cost of a fair-sized gas or electric-light plant, produces the following: coke, which supplies all the *hard* fuel of the community; gas, for lighting, cooking and heating; artificial ice and refrigeration; with steam and electric power for sale for all manufacturing purposes, or even for the operation of an electric railway. Think what such a plant would mean to a small community! By its means these luxuries of the highest civilization, which have hitherto been confined to the larger cities, are put within the reach of the humblest, for the cost is so materially

reduced that the common laborer can well afford to use gas for cooking and electric light in his humble cottage, while ice from the same plant keeps the milk, meat and vegetable supply of the family sweet and pure.

There need be no wonder, then, that with such a long and successful life of useful and helpful invention behind him, the people of his native village in New Hampshire showed desire to do him especial honor on his seventy-fifth birthday, which occurred on the 20th of August last. At the time of his birth, in 1832, the place was called Jefferson Mills, but as there were several "Jeffersons" near by, it was deemed advisable to change the name to Riverton. It is now on the line of the Maine Central. A fine flag-pole was secured from the slopes of Mt. Starr King, surmounted with a golden ball, painted and erected, and on the appointed day over a thousand people assembled from all the region round about in carriages, buggies, tallyhos, phaëtons, straw wagons, automobiles and by railway train, to witness the raising of a monster 20 by 30 feet

United States flag, especially presented to his townsmen by Professor Lowe. Ex-Governor Chester B. Jordan of New Hampshire presided and in most happy vein related incidents connected with the Lowe family of seventy-five and more years ago. He extolled the spirit of this poor, barefooted lad who went out into the world to benefit and bless his fellows, educating himself and placing his name high on the mountain of fame by his own unaided efforts. Two local poets read or sang odes in honor of their townsman, and the great audience joined in the song heartily and cheered lustily when another speaker gave a brief account of Professor Lowe's inventions and achievements. The Rev. Dr. Logue, one of the best known and loved of the ministers of New Hampshire, made a telling speech and fairly electrified the audience, when he dedicated the chapel (before which the ceremonies took place and which was built on the site of the old Lowe homestead) as the Lowe Memorial Union Chapel. A beautiful black and gold tablet has since been

placed over the doorway of the chapel, bearing the following inscription:

Lowe Memorial Union Chapel
Dedicated to the Glory of God
and the benefit of humanity on
the seventy-fifth birthday of
Thaddeus S. C. Lowe
August 20, 1907.

A battery of cannon fired a salute of seventy-five guns and solid and liquid refreshments were served with generous liberality to all who were present.

It was throughout a most enjoyable affair, because of the marked spontaneity of the feelings of the people who had gladly assembled to give honor to Professor Lowe, and the unanimous feeling of all the observers was that as a genuine outpouring of popular feeling and as a tribute of high esteem its spirit and observance was perfect. A fitting conclusion is found in the fact that the citizens have now set on foot a movement to again and finally change the name of their town, this time giving it the name they all delight to honor,—that of their distinguished citizen, *Lowe*.

GEORGE WHARTON JAMES

Pasadena, California.

IDEALISM: A SKETCH. PART I. PLATO, AND KANT'S DELIMITATION OF KNOWLEDGE.

BY JUDGE L. H. JONES.

THAT the services which philosophy has been able to render the cause of religion, while of great and acknowledged value, are yet of a purely negative character, is vouched for by no less an authority than the great Immanuel Kant in the following language: "The greatest and perhaps the sole use of all philosophy of pure reason is, after all, merely negative, since it serves, not as an organon for the enlargement [of knowledge], but as a discipline for its delimitation; and instead of discovering truth, has only the

modest merit of preventing error." Nevertheless, the history of philosophy is undoubtedly the history of the finest achievements of the human intellect; and "the modest merit of preventing error" is second only to the supreme merit of discovering truth.

Among no people, ancient or modern, has philosophy reached a higher stage of development than among the ancient Greeks; for no people have reached a higher state of mental development; or exhibited greater capacity for sustained