



*Maria Mitchell*

## MARIA MITCHELL'S REMINISCENCES OF THE HERSCHELS.<sup>1</sup>



IN visiting Europe some years since with the definite purpose of traveling for study, I accepted whatever letters were offered me to aid me in my efforts. Among others, one of my scientific friends sent me half a dozen letters of introduction, and then in a private note said, "I dare not give you a letter to the 'Bear of Blackheath.'" Many times while crossing the Atlantic I found myself wondering who the "Bear of Blackheath" might be. One of the first friends I made in London was Mr. Airy, the astronomer royal at Greenwich. I was adopted at once as one of the household, and upon the care of that

family my comfort in the whole of my tour largely depended. But sitting one day in the drawing-room with the astronomer royal, I looked out upon the beautiful country around and asked, "What is this charming region called?" He replied, "Blackheath"; and I awoke to the consciousness that I was talking with the "Bear."

My acquaintance with the Herschels came through the Airys.

The little that is known of the ancestors of the Herschels is honorable. Abraham, Isaac, and Jacob, as the representatives of three generations were called, were sound Protestants, in days when and in places where Protestantism was a reproach. Abraham Herschel, the great-great-grandfather of John, was expelled from Mahren, his place of residence, on account of his Protestantism. Isaac, his son, was a farmer

<sup>1</sup> See "The Three Herschels," in this magazine for June, 1885.

near Leipsic. Jacob, son of Isaac, declined agricultural pursuits, and gave expression to the family aptitude for music by making it his profession, by bringing up his sons to the same calling, and by developing musical ability in all his ten children. Among the sons was the astronomer, Frederick William, who was born at Hanover in 1738, and came to England at one-and-twenty as a professional musician, but caring even more for something else than for music—metaphysics. To the end of his life, when he was known all over the world for his astronomical discoveries, his chief delight was in metaphysical study and argumentation. Perhaps we may ascribe to this taste, prevailing in the little household at Slough, the tendency of his scientific son, John, to diverge into metaphysical criticism whenever his theme, or any interruption of it, afforded occasion in the course of composition.

John Herschel was born in the well-known house at Slough, where strangers were by that time coming from far-distant lands to see the wonderful machine by which great news had already descended out of the sky.

Most astronomers come to astronomy through mathematics, or come to mathematics through astronomy. The Herschels were a musical family; music was their vocation; science was their recreation. Although of Jacob Herschel's children Sir William and Caroline are the only ones who are known to science, it is evident that the taste for science belonged to the whole family, as Caroline Herschel in her autobiography speaks of lying awake and listening to discussions between the father and the elder brothers in which the names of Newton, Leibnitz, and Euler frequently occurred.

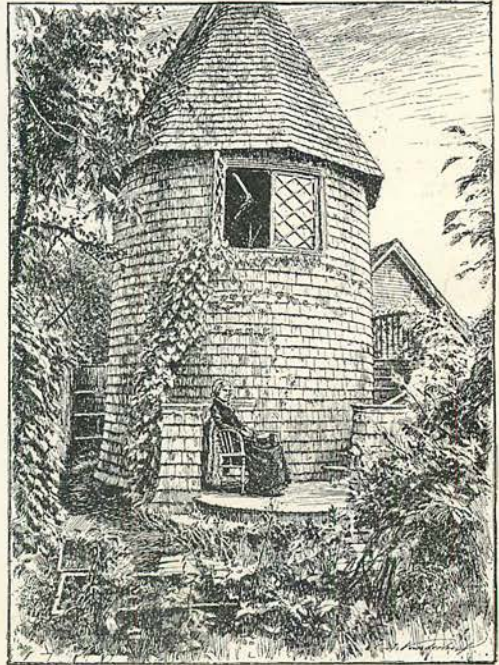
William Herschel considered himself very fortunate when he was engaged as musician to an English regiment. Growing in reputation, he was appointed organist in a church, studied Italian, Latin, and Greek by himself, and read mathematical works on music. Thus music led him to mathematics, thence to optics, to astronomy, to discoveries, to reputation. He became known to George III., was pensioned, gave himself wholly to astronomy, was knighted, and soon became a member of all the learned societies of Europe.

Sir William and Sir John were remarkable for the variety of their acquirements. Starting with a love of science, they followed where it led, into the trackless regions of space and among remote nebulae, into those tangled ways where metaphysical and mathematical sciences seem to mingle, touching the margin of that debatable land where theology and science meet without recognition, yet keeping, especially in Sir John's case, the equanimity of the philosopher and a kindliness of heart which

made him tolerant of all and rendered him beloved as well as honored by those who knew him.

Workers in physical science have generally been long-lived, perhaps because only with length of years can anything be done in science. Perhaps, too, scientific studies are health-promoting, for if it is hour after hour over books, it is also hour after hour alone with nature.

The Herschels worked a great many years. Sir William Herschel's papers, published in various scientific journals, stretch through a period of forty years. Sir John Herschel's reach through a period of fifty-seven years—about twice the average length of life. Sir William Herschel died at eighty-three, Sir John at seventy-eight; and, as if to show that a woman can live and work even longer than a man, Caroline, the sister of Sir William, died at ninety-eight.



MARIA MITCHELL'S OBSERVATORY AT LYNN, MASS.

Is it worth while to talk about the unhealthiness of "night air" when that class of people who are most exposed to its influence, whose calling keeps them breathing it, are so long-lived?—for the work of the practical astronomer is mainly out-of-doors and in good night air, instead of indoors in bad air. I think it is Florence Nightingale who asks what air can any one breathe in the night except night air.

It is scarcely possible to understand nature as the Herschels did without knowing some-

thing in many directions, particularly in physical science. One who seeks to understand the relation of worlds must know something of the constitution of those worlds,—their masses, their densities,—of physical geography, of chemistry, of geology, of natural philosophy. He must know something of language, for he must know what has been written. If he would understand the language which is unlike his own he must know something of the genius of the people whence those writings came; he must understand the national mind.

There is a phenomenon well known to astronomical observers as "personal equation." No two persons receive an impression and make it known in the same time. Thus, if one sees a star, and calls out that he sees it, the interval of time which elapses between the sight and the call, the seeing and the speaking, is different for any two persons. We call this difference "personal equation."

There seems to be a "national equation." We do not expect that even the little popular scientific work which we take up written in French shall reach conclusions by the same processes of thought as those by which the little German book will reach the same. If we would understand, then, the science of the period, we must know the national soils in which science has taken root.

A singular illustration of national differences was seen in the case of the discovery of the planet Neptune. Two leading men, one in England and one in France, sitting in their studies, proved by careful mathematical investigations that there must be a planet away out beyond what were considered the limits of our solar system. The Englishman worked out his problem first, but pondered long, thought much, and consulted with others before he published it. The Frenchman finished his computations, put his pencil down, and announced the result in the next day's papers. When the planet was found both Englishman and Frenchman claimed the discovery. But a third, and he was an American, said, "True, you have each declared a planet to exist, and a planet has been found; but you did not agree in your calculations, and the planet which has been found is not the planet announced by either."

Sir John Herschel was less a practical than a theoretical astronomer, as much a philosopher as he was astronomer or mathematician, and almost as much a poet. It is said that his bent was decidedly towards metaphysics, but that his work in astronomy was largely the result of love for his father. When I came to look over his printed papers I found that his reputation must rest mainly on his work as a natural philosopher—a work not on practical experi-

ments, but on scientific methods of thought and reasoning.

I have said that my acquaintance with the Herschels came through the Airys. It was in this way.

Lady Airy hoped that I should know the Herschels. She said, "Sir John Herschel is the acknowledged head of astronomy."

I proposed to go to Paris, and as I had leaned upon Mrs. Airy for all the small learning necessary for moving properly along the periphery of English circles, I asked her for a letter to some Englishwoman in Paris.

An Englishwoman's heart once reached and won is yours forever. When I asked Mrs. Airy for a letter to Paris she said: "I know no one in Paris, but Lady Herschel probably does. I will ask her to give you one." And a letter was dispatched to Lady Herschel. Lady Herschel replied: "I know no one in Paris, but Lady Lyell does. I will write to her." A letter was written to Lady Lyell; she was not in England; the letter followed her; she replied to her sister in England and said, "Give a letter to Mrs. Power, the sister of Sir Francis Horner, now in Paris." And from every one of these persons, wholly unknown to me, I received the courtesy so valuable to a stranger. The letter from Lady Herschel contained a kind invitation to Collingwood, and I was specially advised not "to take it on my way," but to make a separate departure.

Lady Herschel afterward wrote to me that if I would name the day I was likely to spend with them, they would send a carriage to Etchingham, the nearest station to Collingwood, where they resided; but time would not allow, and I started without any notice. I reached Etchingham at four o'clock on one of the shortest of the short English days, and taking the only cab, an open one, and an old man for driver, I started for Collingwood. The night became very dark, our path lay through dense woods, and just as I began to be frightened, the old man turned around and asked me if I knew that part of the country. I gasped out, "No," supposing the next demand would be for my purse, when he said in a very gentle way, "This is Hawkhurst, madam—a very respectable neighborhood." The good old fellow was determined that the American woman should appreciate the country.

I arrived at the Herschels' just at dinner time. While the servant was gone to announce me, I looked around the large hall, and the first thing that caught my eye was Borden's map of Massachusetts. I felt at home at once, for that map hung in the room most familiar to me in America.

The servant returned and asked me into the drawing-room, and Sir John Herschel came

in at once. He reached both hands to me very cordially and said, "We did not receive your letter, but you are always welcome in this house." Lady Herschel followed, also with a very kind welcome.

I found a cheery fire awaiting me in my room, and after a few minutes I was asked down to dinner, only Sir John and Lady Herschel being present.

After dinner the family assembled in the drawing-room, and the elder daughters were introduced to me. There were twelve children, although Lady Herschel seemed young and was still handsome; she must have been fifty years old. Sir John was at that time sixty-six years old, but he looked much older, being lame and much bent in his figure. The eldest daughter was absent; a marble bust of her stood in the drawing-room, and I could well believe what I had heard—that she was a beauty.

The second daughter was on a visit to an old lady of the neighborhood who was ill; I met her afterward at Rome, as a bride. I admired her beauty and her simplicity.

An unmarried daughter, Bella, struck me as very intelligent. She was the only English-woman I met in 1857 who had read Lowell's poems.

Then there were groups of boys and girls. Amelia, a pleasant-looking girl, who had been presented at court, a group of little planetoids—Julia, Rose, Francesca (named for Francis Baily), and a dear little girl, Constance Anne, the latter named for Mrs. Dawes, the wife of the astronomer, who is her godmother. The sons were young men: William was in India, Alexander in Trinity College, and John came home for a vacation from some scientific institution.

In the evening we played with letters, putting out charades and riddles, and telling anecdotes, Sir John joining the family party and chatting away like the young people.

He spoke with great admiration of the clearness of the sky at the Cape of Good Hope, which Sir John and his family had visited for the purpose of examining his father's observations.

Sir John said that one of his imaginings in regard to Saturn was that the satellites are the children of the ring, some of one ring and some of another. He told pleasant little anecdotes of some self-made astronomers who came to him with most absurd notions, such as the non-existence of the moon—founded upon the reading of his works! And one good soul sent to him to have a horoscope cast and inclosed a half-crown. Another wrote to him asking, "Shall I marry, and have I seen her?"

One of Sir John Herschel's numerical prob-

lems was this: If, at the time of Cheops, or three thousand years ago, one pair of human beings had lived, and war, pestilence, and famine had not existed, and only natural death came to man, and this pair had doubled once in thirty years, and their children had doubled, and so on, how large would the population of the world be at this time—could they stand upon the earth as a plane?

We were sitting at the breakfast-table when he asked the question. We thought they could not. "But if they stood closely and others stood on their shoulders, man, woman, and child, how many layers would there be?" I said, "Perhaps three." "How many feet of men?" he asked. "Possibly thirty," I said. "Oh, more!" "Well, we'll say a hundred." "Oh, more!" Miss Herschel said, "Enough to reach the moon." "To the sun." "More, more!" cried Sir John, exulting in our astonishment; "bid higher." "To Neptune," said one. "Now you burn," he replied. "*Take a hundred times the distance of Neptune, and it is very near.* That is my way," said he, "of whitewashing war, pestilence, and famine."

Over the fireplace in the dining-room is a portrait of Sir William Herschel, painted, I think, by Russell, with a diagram of the Georgium sidus (Uranus) beside him. The expression of the face is of great vigor, very unlike that of the engravings in the print-shops. Sir John has a miniature of his father with a still better expression. He does not know the painter, for he picked it up by accident in a shop in London. It is exceedingly like Sir John himself.

Sir John's forehead was bold but retreating; his mouth was very good. He was quick in motion and in speech. He said that efforts were making to induce the English Government to accept the decimal coinage. I remarked that it would not be easy to make Englishmen change their ways. "Oh," he said, "we stick to old ways, but we are not cemented to them."

On Sunday morning Lady Herschel went to church, and I with her. The Herschels, like all the country gentry whom I knew in England, attended service in a little old stone church, with no style about it; this had not even an organ. Miss Herschel told me that a good deal of effort had been made to raise money enough to purchase one, but it had failed. In the afternoon I remained at home and looked over the manuscripts of Sir William Herschel and his sister, Sir John pointing out the interesting parts. They were very carefully preserved, and were kept with a system which was in itself a science. The great astronomer wrote his notes on slips of paper at different times; these slips were afterward compared, the results obtained from them were recorded,

and indices to the manuscripts made. The first notes on the planet Uranus, which he discovered, speak of it as a comet,—he dared not call it a planet,—and as a comet it continues for some time to be spoken of in the notes, probably after he knew it to be a planet.<sup>1</sup>

Several of the manuscripts are devoted to the methods of polishing specula; several to observations on light. One of the notes is: "Observed my sister's comet of August 1."

The copies of letters were in themselves numerous and very interesting. The loss of the planet Ceres is mentioned in one to Piazzi. One is to Sir William Watson to ask for a term for the asteroids—what to call them as a *group*. He suggests that more may be discovered. A most remarkable one is to a French gentleman about a chemical discovery, which seems to have been a foreshadowing of photography.

Caroline Herschel followed Sir William to England when he was appointed astronomer to the king, and remained there until his death. She shared in all the night-watches of her brother, and with pencil in hand and eye on clock recorded what he saw, made the calculations, registered, coordinated, classed, and analyzed them.

As a gift for the present Lady Herschel, Caroline Herschel prepared her own biography after she was ninety years of age. It is written in a very clear hand, and although English was not her native tongue, the language is good. The sentences are long, but never obscure. Lady Herschel read some passages to me. She says, "My father told me that as I had neither beauty nor riches, no man would be likely to make me an offer until I was old, when some one might like, on account of my worth, to marry me."

When I mingled with English scientists I was not prepared for so much love of poetry as I found. Mr. Airy, the astronomer royal, could repeat the whole of the "Lady of the Lake." Dr. Whewell, the master of Trinity, was a great lover of poetry, and wrote verses himself, though Sir John Herschel was more particularly the poet of science.

The Herschels had breakfast about eight o'clock. I did not see Lady Herschel at that time, but Miss Herschel poured tea and coffee; Sir John was there. At five or six came dinner, and we were always told the time of day near its approach, and advised to dress, and all who were to come to table made at once some preparation. It was cold weather, but the young

<sup>1</sup> These notes of an evening's observation are always very clearly written, and the words, "Left off here," are as distinct as the rest. The writer was the sister.

<sup>2</sup> The youngest child, at that time two years old, was educated at Girton later.

<sup>3</sup> See Arago's "Memoirs," first series, p. 265, for a celebration in honor of this telescope.

ladies came to dinner in barege dresses and with short sleeves.

It is a common saying in Europe that "Princes, Americans, and fools ride in first-class carriages." Lady Herschel told me that by traveling "second class" she sometimes made valuable acquaintances; she talked with intelligent farmers and learned to know something of a class whom she could never meet socially. I pitied in England the isolation of rank, the narrow circle of class, which becomes narrower and narrower all the way from the peasant to the queen, the peasant having the largest social circle, and the queen the smallest.

I met in England, as all Americans at that time met, great ignorance in regard to America. The eldest daughter of Sir John had read "Uncle Tom's Cabin," and she asked me if it was a true picture of life in America—if it were possible for boys and girls to be educated together; if a girl stood a public examination in America; if a young lady really received guests herself, etc.<sup>2</sup>

I could scarcely believe when I saw Sir John Herschel in his family, guessing conundrums with the children, playing at spelling, and telling funny anecdotes, that he was the same man of whom one had said to me when I first landed in England, "He is living at Hawkhurst, not very well, and not very good-natured." Probably the expression on his countenance of physical suffering has been mistaken for ill temper. He was remarkably a gentleman; more like a woman in his instinctive perception of the wants and wishes of a guest. Just before I came away he came to me, and reaching out a leaf of a manuscript said, "Miss Mitchell, I thought you would like some of my aunt's handwriting," giving me an autograph which I value extremely. It was given to me as a leaf from a folio volume.

Sir John's mind was full of vigor at the time of my visit. He was then engaged in rewriting his "Outlines of Astronomy," but was no longer an active astronomer. He talked with great enthusiasm of the Cape observatory, and described in a very interesting manner the peculiar appearance of a twisted nebula on the larger of the "Magellan Patches."

I went over the grounds the last day, rainy though it was, to get to the barn to see the remains of the telescope used by Sir William: only the tube was left. It was forty feet long, and the diameter was so great that one could sit comfortably within it. Arago says that "In 1840 the family, then residing at Slough, formed in procession and walked around this telescope, then, seated on benches within the tube, sang the song written by Sir John and sealed up the tube—its work was over."<sup>3</sup>

Sir John was said to be a man of no wealth.

The family, including the servants, numbered some twenty persons; and when I asked, "What is meant in England by a person of no wealth?" I was told that it meant one who could not portion his daughters when they married.

It was the period of our distressing financial crisis of 1857, and English as well as American families were ruined. I asked of an English lady, "What will become of the daughters of an English family in which there is no property?" She replied, "They will live on their brother." And the question was asked of me, "What will become of the daughters of an American family in which there is no money?" "They will *earn* money," I replied. The answer was, "You Americans are a sensible people."

The house was very extensive, the grounds proportionately so: the table was to me, as all English tables seemed, over-bountiful; but in style of furniture and of dress I know no merchant's family in Boston so simple.

English habits may have changed since 1857, but at that time I saw no young ladies in silk. The plain print for morning and simple white for evening were all that the daughters of the astronomer royal or those of Sir John Herschel wore; and yet in the family of the astronomer royal, as in that of Sir John Herschel, a ring of the door-bell might announce not only the highest potentate of science in England, but the highest representative of any social circle—even the Queen herself.

You would say, in looking at Caroline Herschel's portrait, which hung in the drawing-room, "She must have been handsome when she was young." Her ruffled cap shades a mild face, whose blue eyes were even then full of animation. But it was merely the beauty of age. I suspect that this is often the case, especially when the life has been such as to develop the soul, which overcomes ugliness of feature and coarseness of complexion.

If you had asked Caroline Herschel after ten years of labor what good had come of it, she would probably have answered, with the extreme simplicity of her nature, that she had relieved her brother of a good deal of wearisome labor and perhaps kept up his vigor and prolonged his life. Probably it never entered her thoughts to be other than the patient and self-sacrificing assistant to a truly great man.

The woman who has peculiar gifts has a definite line marked out for her, and the call from God to do his work in the field of scientific investigation may be as imperative as that which calls the missionary into the moral field, or the mother into the family: as missionary, or as scientist, as sister, or as mother, no woman has the right to lose her individuality. To

discuss the question whether women have the capacity for original investigation in science is simply idle until equal opportunity is given them. We cannot overrate the consequences of such lives, whether it be Mrs. Somerville translating Laplace, Harriet Hosmer modeling her statues, Mrs. Browning writing her poems, or Caroline Herschel spending nights under the open canopy; in all it is the devotion to idea, the loyalty to duty, which reaches to all ages.

One of Caroline Herschel's strong characteristics was the carefulness with which everything was done. We are apt to hurry in everything, as if railroad-speed were the law of daily life—as if our hearts did not beat fast enough. She worked slowly, as if she knew that she had ninety-eight years of this life and all eternity in the next. When she worked in the little observatory at Slough, where the first observations were made, she not only worked in every observatory of the world, but she reached to every school for girls.

If what Caroline Herschel did is a lesson and a stimulus to all women, what she did not do is a warning. Has any being a right not to be? When Caroline Herschel so devoted herself to her brother that on his death her own self died, and her life became comparatively useless, she did, all unconsciously, a wrong, and she made the great mistake of her life.

The fault was only in part her fault. She was honored—late in life—as few women have been, by her family, by her sovereign, by the savants of all Europe. It was too late. It seems probable that her gifts were as fully bestowed as those of her brother; she was left uneducated and undeveloped. It was the English way; it is still the way of the world. Living on more than twenty years after his death, she needed for her own comfort pursuits and avocations outside the life that she had given him, and throughout her nearly one hundred years the world needed all that she could do.

When she kept the records, so systematically and so scientifically that after nearly one hundred years they are still valuable, every line that she wrote was an argument for the higher education of women; when she wrapped herself in innumerable wrappings and took care of the body that the mind might do its duty, she gave a lesson which every girl ought to follow.

She showed also the lesson of the usefulness of the unmarried woman. In England much more than in our country the unmarried woman holds a secondary place—unless she has some title. She even enters the dining-room after every married woman. I would in no way underrate the higher value of the wife and the mother and the blessedness of those whom

God has placed in families, but life need not be a failure and a blank when this position is denied. The family is only a larger one; the usefulness is not so intense, but it may be wider spread.

The peculiarity of Caroline Herschel's character, which in the thought of most persons gave the great charm, was her capacity of self-abnegation. She was the sister of a great man; to help him to make his work complete, to see that it was the best work that could be done, that all guards were placed around it to preserve it, was what she believed to be her duty, and she did it. It seems ungenerous to blame at all where we admire so much.

We make close friendships in England, and then we cross the Atlantic and for a few

months, perhaps for a few years, letters pass, telling of the life on the different sides of the world; then they grow few and far between. In my case came the dreadful war, and America and Great Britain seemed to be still farther separated.

Engrossed as we all were by the great moral question in our own country, personal ties, except of the closest nature, were subordinated. Letters became fewer and then more concisely stated. I heard that Sir John Herschel suffered from "dreadful coughs" in winter, and before the war was over the letters had ceased altogether. Suddenly one spring came the news that sent a pang to many a heart in America—"Sir John Herschel is dead."

*Maria Mitchell.*

## THE OLD BASCOM PLACE.

BY JOEL CHANDLER HARRIS,

Author of "Days and Nights with Uncle Remus," "Free Joe," etc.

VII.



ALL this was no less the result of Francis Underwood's desire than of the doctor's commands. The old practitioner was noted for his skill throughout the region, and after he had talked with Judge Bascom

he gave it as his opinion that the only physic necessary in the case was perfect rest and quiet, and that these could be secured only by allowing the old man to remain undisturbed in the belief that he was once more the owner of the Bascom Place.

"He 'll not trouble you for long," said Dr. Bynum, wiping his spectacles, "and I've no doubt that whatever expense may be incurred will be settled by his old friends. Oh, Bascom still has friends here," exclaimed the doctor, misunderstanding Underwood's gesture of protest. "He went wrong, badly wrong; but he is a Southerner, sir, to the very core, and in the South we are in the habit of looking after our own. We may differ, sir, but when the pinch comes you 'll find us together."

The doctor's lofty air was wholly lost on his companion.

"My dear sir," said Underwood, laying his hand somewhat heavily on the doctor's shoulder, "what do you take me for? Do you suppose that I intend to set up a hospital here?"

"Oh, by no means, by no means," said Dr. Bynum, soothingly. "Not at all; in fact, quite

the contrary. As I say, you shall be reimbursed for all—"

"Dr. Bynum," said Underwood, with some degree of emphasis, "permit me to remind you that Judge Bascom is my guest. There is no question of money except so far as your bill is concerned, and that—"

"Now, now, my *dear* boy," exclaimed the old doctor, holding up both hands in a gesture of expostulation, "don't, *don't* fly up! What is the use? I was only explaining matters; I was only trying to let you know how we Southerners feel. You must have noticed that the poor old Judge has n't been treated very well since his return here. His best friends have avoided him. I was only trying to tell you that they hold him in high esteem, and that they are willing to do all they can for him."

"As a Southerner?" inquired Underwood, "or as a man?"

"Tut, tut!" exclaimed Dr. Bynum. "Don't come running at me with your head down and your horns up. We've no time to fall into a dispute. You look after the Judge as a Northerner, and I 'll look after him as a Southerner. His daughter must come here. He is very feeble. He has but one irrational idea, and that is that he owns the old Place. In every other particular his mind is sound, and he will give you no trouble. His idea must be humored and even then the collapse will come too soon for that poor girl, his daughter—as lovely a creature, sir, as you ever saw."

This statement was neither information nor news so far as Underwood was concerned. "If