

PAPERS AND LETTERS READ AT THE JOINT SESSION

LETTER FROM ALFRED E. HOWELL

"I received your letter announcing the meeting of the A.A.A.S. to occur in Nashville soon, and the special emphasis to be given to the life and work of E. E. Barnard.

"It is about the 'Good Man and Great' who wrought so well at Vanderbilt that I think our dearest memories should cluster. I do not say that we have made too much of our heroes of the stadium, but too little of our seers of the classroom.

"*Edward E. Barnard.* I knew him well. He was a member of my Aunt's (Mrs. Fanny D. Nelson's) Sunday school class—he and Mr. J. W. Braid and Peter Calvert, whose sister he married.

"Many the time I have noted his hollow eyes and faded cheeks and wist not that he was to be world famous from his vigils of the night, after an all-day's work at Poole's photograph gallery, his hands still stained with the chemicals.

"Mrs. Nelson was a sister of Mr. Morton B. Howell. She was a woman of extraordinary, even brilliant learning, and I believe Edward Barnard would say the greatest influence in his life. Mr. Peter Calvert can tell you.

"I am delighted to know of the further honors to be accorded him.

"I also knew James S. Ross. He was a member of the Bicycle Club of which I was president. The first telephone set up in Nashville by Nashville men, to my belief, was by Mr. J. W. Braid from Poole's Art Gallery to Aunt Fanny Nelson's room in the Old Hotel St. Cloud where the Cain-Sloan building now is. Mr. Braid, Peter Calvert, Edward Barnard, Jim Ross, talking to Mrs. Nelson and what guests she may have had from time to time. I was one of them and Mr. Morton B. Howell. But Mr. Braid and Peter Calvert can tell you accurately about all this, and, in my humble opinion, they should be consulted and honored in any full account of the early struggles of Edward E. Barnard, for they undoubtedly helped him, as did Mrs. Nelson inspire him.

"It was the immortal fire within himself that made him great, but we who knew him, are proud of the memory. He walked among us and wist not that his face shone."

FIRST EMPLOYMENT OF BARNARD; HIS FIRST TELESCOPE

J. W. BRAID, NASHVILLE, TENN.

"Recommended by the firm of Gurney & Sons, where J. W. Braid was employed as photographic chemist, I came to Nashville from New York City in the spring of 1870 to take the place of operator in the photographic gallery of J. H. Van Stavoren. The gallery occupied the second and third floors of a brick house (still standing) at the southeast corner of Cherry (now Fourth Avenue)

and Union streets. It was there I first met Edward Barnard, then a lad of about twelve or thirteen years of age.

"Van Stavoren had come to Nashville about the time of the beginning of the Civil War and established this photographic gallery, but he was specially interested in portrait painting. In the process he used an immense solar camera to get an enlarged image. Attached to the frame of the camera at one edge in front was a piece of sheet iron which had a hole bored through the portion projecting beyond the edge. The rays of the sun passing through the hole made a bright spot on a small screen several feet distant. This spot could be kept in the same place on the screen by turning the big camera on its axis slowly and continuously to correspond with the change in position of the sun. Keeping the spot motionless also held the image framed by the camera steady for the painter. A boy was employed to watch the spot and turn the camera. This was an awfully sleepy job. Edward Barnard was the only boy Van Stavoren had found who could be depended on to do this and keep awake.

"Edward soon became much interested in the properties of lenses. He often said he wished he could get one and fix it to use in looking at the moon and planets. One day when I was in the shop of Mr. Charles Schott I noticed an old ship's spyglass hanging on the wall. It had no lenses. He had bought it for old brass, and intended to cut it up. I made an offer to buy it, and when I told him I wanted it for Ed. Barnard he let me have it for two dollars. It had two draws to it and was about two and one-half inches in diameter, allowing for a two and one-fourth inch optic glass of thirty-four inches focus. We sent to McQueen & Co., of Philadelphia, and got an object glass of thirty-two inches focus which we fitted into the brass tube. We made an eyepiece out of the wreck of an old microscope, which gave a power of about thirty-eight. A simple altazimuth mounting was made. Barnard had a good tripod which had been a surveyor's instrument stand. It answered very well as a support for the telescope.

"The first object that Barnard looked at was the planet Venus, which showed as a beautiful crescent. He was delighted. Then he looked at the planet Jupiter and saw the four moons clear and sharp. The moon in its second stage was next observed, showing details very well with good definition; then some of the simple double stars, such as the two in Ursa Major.

"This simple telescope gave Barnard more pleasure than anything else in his whole life. He afterwards got a three-inch telescope, but although it had a little more power, it did not have as good definition as the two and one-fourth inch instrument.

"In 1871 Van Stavoren failed in business, and his property had to be sold to liquidate his indebtedness to the Peoples Bank. Mr. Rodney Poole, who for some time previously had held an interest in the property, purchased the photographic gallery equipment and continued the business. An interesting department of his business was outdoor photography. This was in charge of J. W. Braid, who

used in this work a dark room resting on a truck which was moved from place to place attached to a one-horse cart. On his photographic excursions he took Edward Barnard with him as an assistant. Some of the earliest pictures of the Vanderbilt grounds and buildings were made in this way.

"After Mr. Poole bought the Van Stavoren gallery, 'Jupiter,' the giant camera, was dismantled and removed. The platform on the roof was left vacant, so that Barnard took his telescope up there at night and for several years used the platform as an observatory. He frequently invited a number of his friends there and entertained them with views of the heavenly bodies. Persons visiting the observatory after reaching the third floor had to climb a ladder. The ladder and the door in the roof still remain, but the platform has been torn away."

LETTER FROM PROFESSOR BARNARD REGARDING MR. BRAID

"To Mr. J. W. Braid, who was the chief photographer at Poole's Photograph Gallery at the corner of Cherry and Union Streets, I owe every obligation. Himself a young man of the greatest scientific skill, he had established a small shop in a back room of the gallery where he had a lathe and where he was especially interested in electrical experiments and the making of instruments for this purpose. When the subject of astronomy was finally brought up, Mr. Braid's skill in making instruments was turned, for a while, from induction coils, etc., to the making of telescopic accessories. Ever ready and generously helpful, he took the deepest interest in helping me by making equipment for the telescope and giving suggestions as to what instruments to get, but mainly in the making of accessories for the telescope. Mr. Braid himself was interested in astronomy, though more in the making of instruments than in actual observation with them. This generous interest on his part continued during my connection with the photograph gallery. To those who do not know the conditions of my early life, it is not possible for me to make clear how helpful he was to me. To this must be added the unceasing kindness of Mrs. Braid.

"There is one thing in connection with Mr. Braid's scientific work in the little shop in the gallery that seems to be lost track of, yet it was of the utmost scientific importance.

"In September of 1877, the American Association for the Advancement of Science met at Nashville. Alexander Graham Bell had just invented the telephone. He attended the meeting and gave an exhibition of the performance of the telephone at the home of Mrs. James K. Polk, the wires being stretched across the street to a neighboring house. The results, though not of amazing strength, showed the value of the instrument.

"Mr. Braid had already been interested in the invention and from the diagrams and descriptions that had appeared in the *Scientific American*, constructed some telephones that from experi-

ments in the gallery gave a most favorable result. So strongly was the voice reproduced that he and a young friend of his, James Ross, decided that they should be able to talk several hundred miles with it. They had friends in the management of the Western Union Telegraph Company at Nashville. It was arranged with them that a trial should be made between Nashville and Bowling Green over the A. & P. lines, a distance of some seventy miles, on a Sunday morning in January of 1878. Mr. Ross went to Bowling Green for the purpose and Mr. Braid and others (I being one of the party) met at the Western Union office in Nashville. Connections were made and at 11 A.M. Ross responded, and for an hour conversations were carried on, every word being clearly heard—almost as clearly, from my recollection, as it would be today. Ross played on the guitar and sang. It was a triumph in every way. Up to that time long distance conversation (if I remember correctly) had been possible over only one or two miles, so that Mr. Braid's success was far ahead of others. The Nashville papers next morning gave an account of this remarkable experiment (written, I believe, by Mr. Roberts, on the staff of the *Nashville American*).

"Mr. Braid has never received proper credit for this splendid triumph. Within the same year, as I remember, he was offered by Mr. Bell (whose father, I think it was, Mr. Braid had known in Scotland) the establishment of a telephone service in Nashville. For some reason, Mr. Braid did not recognize the importance of this opportunity and he refused it. It was then passed to James Ross, who established the first telephone service in Nashville."

REMINISCENCES OF BARNARD

P. R. CALVERT, NASHVILLE, TENN.

I first met Edward Emerson Barnard in 1875. I had just come from England and with some art studies I was at Poole's Art Gallery. Barnard saw my drawings, marked E. S. K. (examined South Kensington). We became good friends. He, himself, made some wonderfully good drawings of the planets Mars and Saturn and Jupiter as seen through his telescope. Barnard as printer, Braid as operator and I as retoucher and colorist were together every day for five years. Barnard was never, like other young men, bent on pleasure and frivolous pursuits; necessity and responsibility made him serious, for from the age of about 12 years he was the main support of his invalid mother who was unable to walk and with beclouded mind, her one joy in life was her devoted boy, Edward. Under such circumstances no wonder he was thoughtful.

From earliest years he had been interested in the stars.

The story of how he came to be possessor of a volume by Rev. Thos. Dick, the Scotch divine and philosopher, has often been told and I will not repeat it here.

Mr. Braid has told you of his first telescope. Instead of satisfying, it made him more eager for a larger instrument. We had heard of a telescope owned by the Acklen family at Belmont. Barnard, who had not been in school more than two months in his life, urged me to write and inquire concerning it. He felt that he could not write a decent letter. The result of the inquiry was that the instrument was sent to him by express with the privilege of examining it, but it proved to be lacking when tested and he returned it, paying expressage both ways. In return for writing this letter I had exacted a promise that he would go with me to Sunday school. There he met Mrs. Anson Nelson, a refined and cultured lady, a beautiful character, who became one of his best friends. About this time the A.A.A.S. met in Nashville and Mr. Nelson, who met and knew every man of importance in Nashville, took Barnard up to the Capitol where the sessions of the Association were held, and introduced him to Professor Simon Newcomb, who was that year president of the Association. Professor Newcomb heard his story then told him rather brusquely that he should put away his telescope and study mathematics. Barnard was much depressed at the unsympathetic words of the great man and after the interview, as he confessed to Mr. Braid, he got behind one of the big columns and had a good cry. The sequel to this incident is so interesting that I quote Professor Newcomb's own version of it as told in his reminiscences of an astronomer. I quote from the *Vanderbilt Alumnus*, an article by Dr. McGill.

Professor Newcomb writes:

"In 1892, only four years after the mounting of the telescope, came the surprising announcement that the work of Galileo on Jupiter had been continued by the discovery of a fifth satellite to that planet. This is the most difficult object in the solar system, only one or two observers besides Barnard having commanded the means of seeing it.

"The incident of my first acquaintance with the discovery is not flattering to my pride, but may be worth recalling.

"In 1877 I was president of the American Association for the Advancement of Science at the meeting held in Nashville. There I was told of a young man a little over twenty years of age, a photographer by profession, who was interested in astronomy and who desired to see me. I was, of course, very glad to make his acquaintance. I found that with his scanty earnings, he had managed either to purchase or get together the materials for making a small telescope. He was desirous of doing something with it that might be useful in astronomy and wished to know what suggestion I could make in that line. I did not for a moment suppose that there was a reasonable probability of the young man's doing anything better than amuse himself. At the same time feeling it a duty to encourage him, I suggested that there was only one thing open to an astronomical observer situated as he was, and that was the discovery of comets.

"I had never even looked for a comet myself and knew little about the methods of exploring the heavens for one, except what had been told me by H. P. Tuttle. But I gave him the best directions I could, and we parted. It is now rather humiliating that I did not inquire more thoroughly into the case. It would have taken more prescience than I was gifted with to expect that I should live to see the bashful youth awarded the gold medal of the Royal Astronomical Society for his work."

Dr. McGill continues: Newcomb had received this medal in 1877. The Bruce gold medal of the Astronomical Society of the Pacific, awarded to Newcomb in 1898, was awarded to Barnard in 1918. The young man who approached this distinguished astronomer in 1877, with trepidation, entertained him with great pleasure as a guest in his home twenty years later, at the dedication of the Yerkes Observatory.

The admonition of Professor Newcomb did not go unheeded, he engaged the services of Russell Marling, who coached him until he went to Vanderbilt at the call of Bishop McTyeire, where he sat at the feet of Dr. Vaughn and Chancellor Garland.

This paper is getting too long for the time allotted me, but I must relate a few incidents illustrative of his character. One morning after a night of observing, he appeared with a raw scratch on the side of his nose. With the intense cold, the rim of the eye-piece had frozen to his skin and when he moved his head away it tore off the narrow strip of skin.

Barnard never wasted his time. When he was urged to visit a friend socially, he would say, "Well, if it rains or is cloudy, I will come."

He had a quiet sense of humor. The following conundrum he would ask, if he had the right kind of an audience. Looking at a young fellow he asked, "Why is George's mustache like some comets?" "Because it is looked for and expected long before it is visible to the naked eye."

The road up the mountain to Lick Observatory is very tortuous, has many sharp curves,—he explained that it was because one good turn deserves another.

Barnard was not lacking in poetical sentiment. His favorite poem was *Lalla Rookh*. I think that the only extravagant expenditure I ever saw him indulge in was a fine copy of Bryant's collection of poetry.

The following lines I copied from an album belonging to my sister,—

See yon star of silv'ry ray
How at dawn it fades away,
But the night will bring anew
All its light of silver hue.

Thus may deeds of greatness cease
At the dawn of gentle peace
But the night of strife and pain
Brings their lustre back again.

As evidence of the esteem in which he was held by his townsmen, in my front yard, to one side, there lies a pile of building stones, hauled there by order of Mr. Samuel Watkins and Judge John M. Lea, who determined to build him an observatory at his home. Barnard stopped them as he knew they would not build such an observatory as he would hope some time to get into. So the rocks still lie there with the honeysuckle trailing over them, as if in the effort to mollify the wounded feelings of the rocks vainly protesting against such inglorious end, after being designed for so noble a purpose.

Barnard went to Vanderbilt and later to the Lick, at that time the largest telescope in the world.

As evidence of the esteem of his contemporary astronomers, Dr. Max Wolf of Heidelberg, when he heard of the death of Mrs. Barnard, wrote to Barnard saying he would like to name one of the asteroids in her honor, and so on the tombstone at Mt. Olivet, after the name comes the line, "In whose honor is named the minor planet 907, Rhoda."

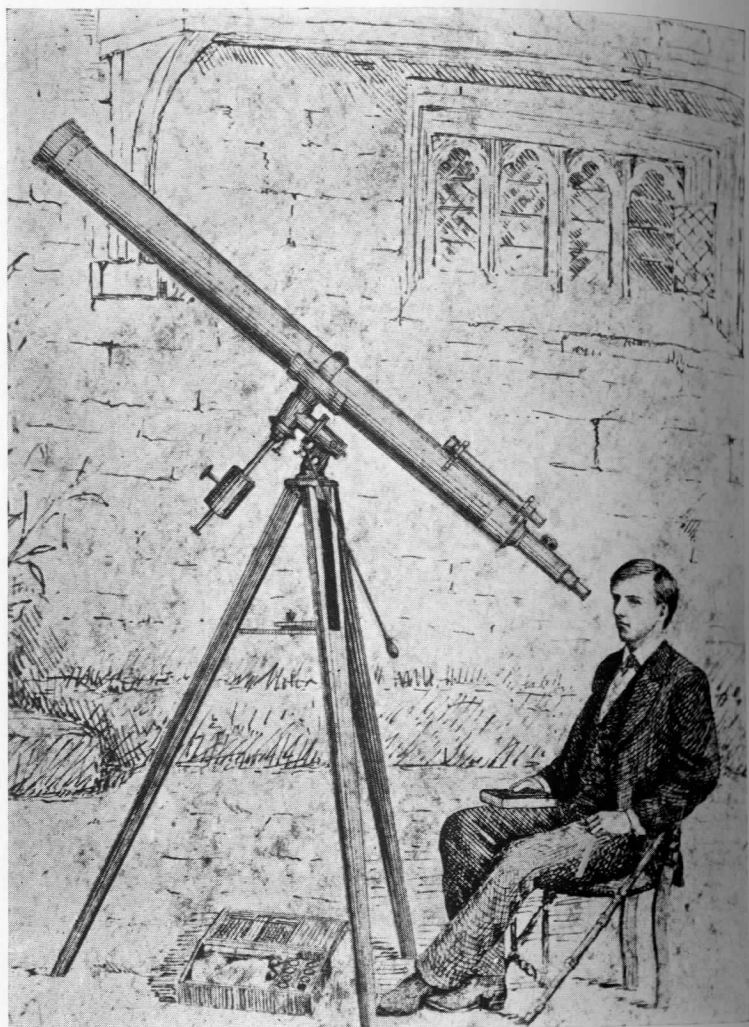
As evidence of his affection and regard he bequeathed his home and grounds with his books and medals to the observatory as a memorial to his wife.



Barnard's first photographic work, about 1866, was to keep this enlarging camera pointed toward the sun. The man at the left is Van Stavoren, the proprietor, and the man in the camera is J. W. Braid.



Roof on which rested the enlarging camera shown above. This building, located at the corner of Fourth Avenue, North, and Union Street, Nashville, has been used continuously as a photographic establishment for more than 60 years. During that time it was occupied first by Van Stavoren, then by Poole and since 1896 by Calvert Bros. The Calvert brothers were brothers-in-law of Barnard.



Barnard with his 5-inch telescope, made for him by John Byrne of New York, the instrument with which he discovered his first comet in 1881 and his second in 1882. From pen sketch by P. R. Calvert, brother-in-law of Barnard.