The Brick Moon and Other Stories

By

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The Brick Moon

[From the papers of Captain FREDERIC INGHAM.]

I

PREPARATION

I have no sort of objection now to telling the whole story. The subscribers, of course, have a right to know what became of their money. The astronomers may as well know all about it, before they announce any more asteroids with an enormous movement in declination. And experimenters on the longitude may as well know, so that they may act advisedly in attempting another brick moon or in refusing to do so.

It all began more than thirty years ago, when we were in college; as most good things begin. We were studying in the book which has gray sides and a green back, and is called "Cambridge Astronomy" because it is translated from the French. We came across this business of the longitude, and, as we talked, in the gloom and glamour of the old South Middle dining-hall, we had going the usual number of students' stories about rewards offered by the Board of Longitude for discoveries in that matter,-- stories, all of which, so far as I know, are lies. Like all boys, we had tried our hands at perpetual motion. For me, I was sure I could square the circle, if they would give me chalk enough. But as to this business of the longitude, it was reserved for Q.[1] to make the happy hit and to explain it to the rest of us.

[1] Wherever Q. is referred to in these pages my brother Nathan is meant. One of his noms de plume was Gnat Q. Hale, because G and Q may be silent letters.

I wonder if I can explain it to an unlearned world, which has not studied the book with gray sides and a green cambric back. Let us try.

You know then, dear world, that when you look at the North Star, it always appears to you at just the same height above the horizon or what is between you and the horizon: say the Dwight School-house, or the houses in Concord Street; or to me, just now, North College. You know also that, if you were to travel to the North Pole, the North Star would be just over your head. And, if you were to travel to the equator, it would be just on your horizon, if you could see it at all through the red, dusty, hazy mist in the north, as you could not. If you were just half-way between pole and equator, on the line between us and Canada, the North Star would be half-way up, or 45@ from the horizon. So you would know there that you were 45@ from the equator. Then in Boston, you would find it was 42@ 20' from the horizon. So you know there that you are 42@ 20' from the horizon. So you know there that you are 47@ 40' high, so our friends at Seattle know that they are at 47@ 40' from the equator. The latitude of a place, in other words, is found very easily by any observation which shows how high the North Star is; if you do

not want to measure the North Star, you may take any star when it is just to north of you, and measure its height; wait twelve hours, and if you can find it, measure its height again. Split the difference, and that is the altitude of the pole, or the latitude of you, the observer.

"Of course we know this," says the graduating world. "Do you suppose that is what we borrow your book for, to have you spell out your miserable elementary astronomy?" At which rebuff I should shrink distressed, but that a chorus of voices an octave higher comes up with, "Dear Mr. Ingham, we are ever so much obliged to you; we did not know it at all before, and you make it perfectly clear."

Thank you, my dear, and you, and you. We will not care what the others say. If you do understand it, or do know it, it is more than Mr. Charles Reade knew, or he would not have made his two lovers on the island guess at their latitude, as they did. If they had either of them been educated at a respectable academy for the Middle Classes, they would have fared better.

Now about the longitude.

The latitude, which you have found, measures your distance north or south from the equator or the pole. To find your longitude, you want to find your distance east or west from the meridian of Greenwich. Now, if any one would build a good tall tower at Greenwich, straight into the sky,--say a hundred miles into the sky,--of course if you and I were east or west of it, and could see it, we could tell how far east or west we were by measuring the apparent height of the tower above our horizon. If we could see so far, when the lantern with a Drummond's light, "ever so bright," on the very top of the tower, appeared to be on our horizon, we should know we were eight hundred and seventy-three miles away from it. The top of the tower would answer for us as the North Star does when we are measuring the latitude. If we were nearer, our horizon would make a longer angle with the line from the top to our place of vision. If we were farther away, we should need a higher tower.

But nobody will build any such tower at Greenwich, or elsewhere on that meridian, or on any meridian. You see that to be of use to the half the world nearest to it, it would have to be so high that the diameter of the world would seem nothing in proportion. And then, for the other half of the world you would have to erect another tower as high on the other side. It was this difficulty that made Q. suggest the expedient of the Brick Moon.

For you see that if, by good luck, there were a ring like Saturn's which stretched round the world, above Greenwich and the meridian of Greenwich, and if it would stay above Greenwich, turning with the world, any one who wanted to measure his longitude or distance from Greenwich would look out of window and see how high this ring was above his horizon. At Greenwich it would be over his head exactly. At New Orleans, which is quarter round the world from Greenwich, it would be just in his horizon. A little west of New Orleans you would begin to look for the other half of the ring on the west instead of the east; and if you went a little west of the Feejee Islands the ring would be over your head again. So if we only had a ring like that, not round the equator of the world,--as Saturn's ring is around Saturn,--but vertical to the plane of the equator, as the brass ring of an artificial globe goes, only far higher in proportion,-- "from that ring," said Q., pensively, "we could calculate the longitude."

Failing that, after various propositions, he suggested the Brick Moon. The plan was this: If from the surface of the earth, by a gigantic peashooter, you could shoot a pea upward from Greenwich, aimed northward as well as upward; if you drove it so fast and far that when its power of ascent was exhausted, and it began to fall, it should clear the earth, and pass outside the North Pole; if you had given it sufficient power to get it half round the earth without touching, that pea would clear the earth forever. It would continue to rotate above the North Pole, above the Feejee Island place, above the South Pole and Greenwich, forever, with the impulse with which it had first cleared our atmosphere and attraction. If only we could see that pea as it revolved in that convenient orbit, then we could measure the longitude from that, as soon as we knew how high the orbit was, as well as if it were the ring of Saturn.

"But a pea is so small!"

"Yes," said Q., "but we must make a large pea." Then we fell to work on plans for making the pea very large and very light. Large,--that it might be seen far away by storm-tossed navigators: light,--that it might be the easier blown four thousand and odd miles into the air; lest it should fall on the heads of the Greenlanders or the Patagonians; lest they should be injured and the world lose its new moon. But, of course, all this lath- and-plaster had to be given up. For the motion through the air would set fire to this moon just as it does to other aerolites, and all your lath-and-plaster would gather into a few white drops, which no Rosse telescope even could discern. "No," said Q. bravely, "at the least it must be very substantial. It must stand fire well, very well. Iron will not answer. It must be brick; we must have a Brick Moon."

Then we had to calculate its size. You can see, on the old moon, an edifice two hundred feet long with any of the fine refractors of our day. But no such refractors as those can be carried by the poor little fishermen whom we wanted to befriend, the bones of whose ships lie white on so many cliffs, their names unreported at any Lloyd's or by any Ross,

Themselves the owners and their sons the crew.

On the other hand, we did not want our moon two hundred and fifty thousand miles away, as the old moon is, which I will call the Thornbush moon, for distinction. We did not care how near it was, indeed, if it were only far enough away to be seen, in practice, from almost the whole world. There must be a little strip where they could not see it from the surface, unless we threw it infinitely high. "But they need not look from the surface," said Q.; "they might climb to the mast-head. And if they did not see it at all, they would know that they were ninety degrees from the meridian."

This difficulty about what we call "the strip," however, led to an improvement in the plan, which made it better in every way. It was clear that even if "the strip" were quite wide, the moon would have to be a good way off, and, in proportion, hard to see. If, however, we would satisfy ourselves with a moon four thousand miles away, THAT could be seen on the earth's surface for three or four thousand miles on each side; and twice three thousand, or six thousand, is one fourth of the largest circumference of the earth. We did not dare have it nearer than four thousand miles, since even at that distance it would be eclipsed three hours out of every night; and we wanted it bright and distinct, and not of that lurid, copper, eclipse color. But at four thousand miles' distance the moon could be seen by a belt of observers six or eight thousand miles in diameter. "Start, then, two moons,"--this was my contribution to the plan. "Suppose one over the meridian of Greenwich, and the other over that of New Orleans. Take care that there is a little difference in the radii of their orbits, lest they `collide' some foul day. Then, in most places, one or other, perhaps two will come in sight. So much the less risk of clouds: and everywhere there may be one, except when it is cloudy. Neither need be more than four thousand miles off; so much the larger and more beautiful will they be. If on the old Thornbush moon old Herschel with his reflector could see a town-house two hundred feet long, on the Brick Moon young Herschel will be able to see a dab of mortar a foot and a half long, if he wants to. And people without the reflector, with their opera-glasses, will be able to see sufficiently well." And to this they agreed: that eventually there must be two Brick Moons. Indeed, it were better that there should be four, as each must be below the horizon half the time. That is only as many as Jupiter has. But it was also agreed that we might begin with one.

Why we settled on two hundred feet of diameter I hardly know. I think it was from the statement of dear John Farrar's about the impossibility of there being a state house two hundred feet long not yet discovered, on the sunny side of old Thornbush. That, somehow, made two hundred our fixed point. Besides, a moon of two hundred feet diameter did not seem quite unmanageable. Yet it was evident that a smaller moon would be of no use, unless we meant to have them near the world, when there would be so many that they would be confusing, and eclipsed most of the time. And four thousand miles is a good way off to see a moon even two hundred feet in diameter.

Small though we made them on paper, these two- hundred-foot moons were still too much for us. Of course we meant to build them hollow. But even if hollow there must be some thickness, and the quantity of brick would at best be enormous. Then, to get them up! The pea- shooter, of course, was only an illustration. It was long after that time that Rodman and other guns sent iron balls five or six miles in distance,--say two miles, more or less, in height.

Iron is much heavier than hollow brick, but you can build no gun with a bore of two hundred feet now,--far less could you then. No.

Q. again suggested the method of shooting oft the moon. It was not to be by any of your sudden explosions. It was to be done as all great things are done,--by the gradual and silent accumulation of power. You all know that a flywheel--heavy, very heavy on the

circumference, light, very light within it--was made to save up power, from the time when it was produced to the time when it was wanted. Yes? Then, before we began even to build the moon, before we even began to make the brick, we would build two gigantic fly-wheels, the diameter of each should be "ever so great," the circumference heavy beyond all precedent, and thundering strong, so that no temptation might burst it. They should revolve, their edges nearly touching, in opposite directions, for years, if it were necessary, to accumulate power, driven by some waterfall now wasted to the world. One should be a little heavier than the other. When the Brick Moon was finished, and all was ready, IT should be gently rolled down a gigantic groove provided for it, till it lighted on the edge of both wheels at the same instant. Of course it would not rest there, not the tenthousandth part of a second. It would be snapped upward, as a drop of water from a grindstone. Upward and upward; but the heavier wheel would have deflected it a little from the vertical. Upward and northward it would rise, therefore, till it had passed the axis of the world. It would, of course, feel the world's attraction all the time, which would bend its flight gently, but still it would leave the world more and more behind. Upward still, but now southward, till it had traversed more than one hundred and eighty degrees of a circle. Little resistance, indeed, after it had cleared the forty or fifty miles of visible atmosphere. "Now let it fall," said Q., inspired with the vision. "Let it fall, and the sooner the better! The curve it is now on will forever clear the world; and over the meridian of that lonely waterfall,--if only we have rightly adjusted the gigantic flies,--will forever revolve, in its obedient orbit, the--

BRICK MOON,

the blessing of all seamen,--as constant in all change as its older sister has been fickle, and the second cynosure of all lovers upon the waves, and of all girls left behind them." "Amen," we cried, and then we sat in silence till the clock struck ten; then shook each other gravely by the hand, and left the South Middle dining- hall.

Of waterfalls there were plenty that we knew.

Fly-wheels could be built of oak and pine, and hooped with iron. Fly-wheels did not discourage us.

But brick? One brick is, say, sixty-four cubic inches only. This moon,--though we made it hollow,-- see,--it must take twelve million brick.

The brick alone will cost sixty thousand dollars!

The brick alone would cost sixty thousand dollars. There the scheme of the Brick Moon hung, an airy vision, for seventeen years,--the years that changed us from young men into men. The brick alone, sixty thousand dollars! For, to boys who have still left a few of their college bills unpaid, who cannot think of buying that lovely little Elzevir which Smith has for sale at auction, of which Smith does not dream of the value, sixty thousand dollars seems as intangible as sixty million sestertia. Clarke, second, how much are sixty

million sestertia stated in cowries? How much in currency, gold being at 1.37 1/4/? Right; go up. Stop, I forget myself!

So, to resume, the project of the Brick Moon hung in the ideal, an airy vision, a vision as lovely and as distant as the Brick Moon itself, at this calm moment of midnight when I write, as it poises itself over the shoulder of Orion, in my southern horizon. Stop! I anticipate. Let me keep--as we say in Beadle's Dime Series--to the even current of my story.

Seventeen years passed by, we were no longer boys, though we felt so. For myself, to this hour, I never enter board meeting, committee meeting, or synod, without the queer question, what would happen should any one discover that this bearded man was only a big boy disguised? that the frockcoat and the round hat are none of mine, and that, if I should be spurned from the assembly, as an interloper, a judicious public, learning all the facts, would give a verdict, "Served him right." This consideration helps me through many bored meetings which would be else so dismal. What did my old copy say?--

"Boards are made of wood, they are long and narrow."

But we do not get on!

Seventeen years after, I say, or should have said, dear Orcutt entered my room at Naguadavick again. I had not seen him since the Commencement day when we parted at Cambridge. He looked the same, and yet not the same. His smile was the same, his voice, his tender look of sympathy when I spoke to him of a great sorrow, his childlike love of fun. His waistband was different, his pantaloons were different, his smooth chin was buried in a full beard, and he weighed two hundred pounds if he weighed a gramme. O, the good time we had, so like the times of old! Those were happy days for me in Naguadavick. At that moment my double was at work for me at a meeting of the publishing committee of the Sandemanian Review, so I called Orcutt up to my own snuggery, and we talked over old times; talked till tea was ready. Polly came up through the orchard and made tea for us herself there. We talked on and on, till nine, ten at night, and then it was that dear Orcutt asked me if I remembered the Brick Moon. Remember it? of course I did. And without leaving my chair I opened the drawer of my writing-desk, and handed him a portfolio full of working-drawings on which I had engaged myself for my "third"[1] all that winter. Orcutt was delighted. He turned them over hastily but intelligently, and said: "I am so glad. I could not think you had forgotten. And I have seen Brannan, and Brannan has not forgotten." "Now do you know," said he, "in all this railroading of mine, I have not forgotten. When I built the great tunnel for the Cattawissa and Opelousas, by which we got rid of the old inclined planes, there was never a stone bigger than a peach-stone within two hundred miles of us. I baked the brick of that tunnel on the line with my own kilns. Ingham, I have made more brick, I believe, than any man living in the world!"

[1] "Every man," says Dr. Peabody, "should have a vocation and an avocation." To which I add,"A third."

"You are the providential man," said I.

"Am I not, Fred? More than that," said he; "I have succeeded in things the world counts worth more than brick. I have made brick, and I have made money!"

"One of us make money?" asked I, amazed.

"Even so," said dear Orcutt; "one of us has, made money." And he proceeded to tell me how. It was not in building tunnels, nor in making brick. No! It was by buying up the original stock of the Cattawissa and Opelousas, at a moment when that stock had hardly a nominal price in the market. There were the first mortgage bonds, and the second mortgage bonds, and the third, and I know not how much floating debt; and worse than all, the reputation of the road lost, and deservedly lost. Every locomotive it had was asthmatic. Every car it had bore the marks of unprecedented accidents, for which no one was to blame. Rival lines, I know not how many, were cutting each other's throats for its legitimate business. At this juncture dear George invested all his earnings as a contractor, in the despised original stock,--he actually bought it for 3 1/4 per cent,--good shares that had cost a round hundred to every wretch who had subscribed. Six thousand eight hundred dollars--every cent he had--did George thus invest. Then he went himself to the trustees of the first mortgage, to the trustees of the second, and to the trustees of the third, and told them what he had done.

Now it is personal presence that moves the world. Dear Orcutt has found that out since, if he did not know it before. The trustees who would have sniffed had George written to them, turned round from their desks, and begged him to take a chair, when he came to talk with them. Had he put every penny he was worth into that stock? Then it was worth something which they did not know of, for George Orcutt was no fool about railroads. The man who bridged the Lower Rapidan when a freshet was running was no fool.

"What were his plans?"

George did not tell--no, not to lordly trustees--what his plans were. He had plans, but he kept them to himself. All he told them was that he had plans. On those plans he had staked his all. Now, would they or would they not agree to put him in charge of the running of that road, for twelve months, on a nominal salary? The superintendent they had had was a rascal. He had proved that by running away. They knew that George was not a rascal. He knew that he could make this road pay expenses, pay bond-holders, and pay a dividend,--a thing no one else had dreamed of for twenty years. Could they do better than try him?

Of course they could not, and they knew they could not. Of course they sniffed and talked, and waited, and pretended they did not know, and that they must consult, and so forth and so on. But of course they all did try him, on his own terms. He was put in charge of the running of that road.

In one week he showed he should redeem it. In three months he did redeem it!

He advertised boldly the first day: "Infant children at treble price."

The novelty attracted instant remark. And it showed many things. First, it showed he was a humane man, who wished to save human life. He would leave these innocents in their cradles, where they belonged.

Second, and chiefly, the world of travellers saw that the Crichton, the Amadis, the perfect chevalier of the future, had arisen,--a railroad manager caring for the comfort of his passengers!

The first week the number of the C. and O.'s passengers was doubled: in a week or two more freight began to come in, in driblets, on the line which its owners had gone over. As soon as the shops could turn them out, some cars were put on, with arms on which travellers could rest their elbows, with head-rests where they could take naps if they were weary. These excited so much curiosity that one was exhibited in the museum at Cattawissa and another at Opelousas. It may not be generally known that the received car of the American roads was devised to secure a premium offered by the Pawtucket and Podunk Company. Their receipts were growing so large that they feared they should forfeit their charter. They advertised, therefore, for a car in which no man could sleep at night or rest by day,--in which the backs should be straight, the heads of passengers unsupported, the feet entangled in a vice, the elbows always knocked by the passing conductor. The pattern was produced which immediately came into use on all the American roads. But on the Cattawissa and Opelousas this time-honored pattern was set aside.

Of course you see the result. Men went hundreds of miles out of their way to ride on the C. and O. The third mortgage was paid off; a reserve fund was piled up for the second; the trustees of the first lived in dread of being paid; and George's stock, which he bought at 3 1/4, rose to 147 before two years had gone by! So was it that, as we sat together in the snuggery, George was worth well-nigh three hundred thousand dollars. Some of his eggs were in the basket where they were laid; some he had taken out and placed in other baskets; some in nests where various hens were brooding over them. Sound eggs they were, wherever placed; and such was the victory of which George had come to tell.

One of us had made money!

On his way he had seen Brannan. Brannan, the pure- minded, right-minded, shifty man of tact, man of brain, man of heart, and man of word, who held New Altona in the hollow of his hand. Brannan had made no money. Not he, nor ever will. But Brannan could do much what he pleased in this world, without money. For whenever Brannan studied the rights and the wrongs of any enterprise, all men knew that what Brannan decided about it was well-nigh the eternal truth; and therefore all men of sense were accustomed to place great confidence in his prophecies. But, more than this, and better, Brannan was an unconscious dog, who believed in the people. So, when he knew what was the right and

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