

BETTER THAN ALCHEMY

I come now to a part of my narrative which would have been deemed altogether incredible in those closing years of the nineteenth century that witnessed the first steps towards the solution of the deepest mysteries of the ether, although men even then held in their hands, without knowing it, powers which, after they had been mastered and before use had made them familiar, seemed no less than godlike.

For six months after Hall's departure for San Francisco I heard nothing from him. Notwithstanding my intense desire to know what he was doing, I did not seek to disturb him in his retirement. In the meantime things ran on as usual in the world, only a ripple being caused by renewed discoveries of small nuggets of artemisium on the Tetons, a fact which recalled to my mind the remark of my friend when he dislodged a flake of the metal from a crevice during our ascent of the peak. At last one day I received this telegram at my office in New York:

"SAN FRANCISCO, May 16, 1940.

"Come at once. The mystery is solved.

"(Signed) HALL."

As soon as I could pack a grip I was flying westward one hundred miles an hour. On reaching San Francisco, which had made enormous strides since the opening of the twentieth century, owing to the extension of our Oriental possessions, and which already ranked with New York and Chicago among the financial capitals of the world, I hastened to Hall's laboratory. He was there expecting me, and, after a hearty greeting, during which his elation over his success was manifest, he said:

"I am compelled to ask you to make a little journey. I found it impossible to secure the necessary privacy here, and, before opening my experiments, I selected a site for a new laboratory in an unfrequented spot among the mountains this side of Lake Tahoe. You will be the first man, with the exception of my two devoted assistants, to see my apparatus, and you shall share the sensation of the critical experiment."

"Then you have not yet completed your solution of the secret?"

"Yes, I have; for I am as certain of the result as if I had seen it, but I thought you were entitled to be in with me at the death."

From the nearest railway station we took horses to the laboratory, which occupied a secluded but most beautiful site at an elevation of about six thousand feet above sea-level. With considerable surprise I

noticed a building surmounted with a dome, recalling what we had seen from the Grand Teton on the roof of Dr. Syx's mill. Hall, observing my look, smiled significantly, but said nothing. The laboratory proper occupied a smaller building adjoining the domed structure. Hall led the way into an apartment having but a single door and illuminated by a skylight.

"This is my sanctum sanctorum," he said, "and you are the first outsider to enter it. Seat yourself comfortably while I proceed to unveil a little corner of the artemisium mystery."

Near one end of the room, which was about thirty feet in length, was a table, on which lay a glass tube about two inches in diameter and thirty inches long. In the farther end of the tube gleamed a lump of yellow metal, which I took to be gold. Hall and I were seated near another table about twenty-five feet distant from the tube, and on this table was an apparatus furnished with a concave mirror, whose optical axis was directed towards the tube. It occurred to me at once that this apparatus would be suitable for experimenting with electric waves. Wires ran from it to the floor, and in the cellar beneath was audible the beating of an engine. My companion made an adjustment or two, and then remarked:

"Now, keep your eyes on the lump of gold in the farther end of the tube yonder. The tube is exhausted of air, and I am about to concentrate upon the gold an intense electric influence, which will

have the effect of making it a kind of kathode pole. I only use this term for the sake of illustration. You will recall that as long ago as the days of Crookes it was known that a kathode in an exhausted tube would project particles, or atoms, of its substance away in straight lines. Now watch!"

I fixed my attention upon the gold, and presently saw it enveloped in a most beautiful violet light. This grew more intense, until, at times, it was blinding, while, at the same moment, the interior of the tube seemed to have become charged with a luminous vapor of a delicate pinkish hue.

"Watch! Watch!" said Hall. "Look at the nearer end of the tube!"

"Why, it is becoming coated with gold!" I exclaimed.

He smiled, but made no reply. Still the strange process continued. The pink vapor became so dense that the lump of gold was no longer visible, although the eye of violet light glared piercingly through the colored fog. Every second the deposit of metal, shining like a mirror, increased, until suddenly there came a curious whistling sound. Hall, who had been adjusting the mirror, jerked away his hand and gave it a flip, as if hot water had splattered it, and then the light in the tube quickly died away, the vapor escaped, filling the room with a peculiar stimulating odor, and I perceived that the end of the glass tube had been melted through, and the molten gold was slowly

dripping from it.

"I carried it a little too far," said Hall, ruefully rubbing the back of his hand, "and when the glass gave way under the atomic bombardment a few atoms of gold visited my bones. But there is no harm done. You observed that the instant the air reached the kathode, as I for convenience call the electrified mass of gold, the action ceased."

"But your anode, to continue your simile," I said, "is constantly exposed to the air."

"True," he replied, "but in the first place, of course, this is not really an anode, just as the other is not actually a kathode. As science advances we are compelled, for a time, to use old terms in a new sense until a fresh nomenclature can be invented. But we are now dealing with a form of electric action more subtile in its effects than any at present described in the text-books and the transactions of learned societies. I have not yet even attempted to work out the theory of it. I am only concerned with its facts."

"But wonderful as the exhibition you have given is, I do not see," I said, "how it concerns Dr. Syx and his artemisium."

"Listen," replied Hall, settling back in his chair after disconnecting his apparatus. "You no doubt have been told how one night the Syx engine was heard working for a few minutes, the first and only night

work it was ever known to have done, and how, hardly had it started up when a fire broke out in the mill, and the engine was instantly stopped. Now there is a very remarkable story connected with that, and it will show you how I got my first clew to the mystery, although it was rather a mere suspicion than a clew, for at first I could make nothing out of it. The alleged fire occurred about a fortnight after our discovery of the double tunnel. My mind was then full of suspicions concerning Syx, because I thought that a man who would fool people with one hand was not likely to deal fairly with the other.

"It was a glorious night, with a full moon, whose face was so clear in the limpid air that, having found a snug place at the foot of a yellow-pine-tree, where the ground was carpeted with odoriferous needles, I lay on my back and renewed my early acquaintance with the romantically named mountains and 'seas' of the Lunar globe. With my binocular I could trace those long white streaks which radiate from the crater ring, called 'Tycho,' and run hundreds of miles in all directions over the moon. As I gazed at these singular objects I recalled the various theories which astronomers, puzzled by their enigmatical aspect, have offered to a more or less confiding public concerning them.

"In the midst of my meditation and moon gazing I was startled by hearing the engine in the Syx works suddenly begin to run. Immediately a queer light, shaped like the beam of a ship's searchlight, but reddish in color, rose high in the moonlit heavens above the mill. It

did not last more than a minute or two, for almost instantly the engine was stopped, and with its stoppage the light faded and soon disappeared. The next day Dr. Syx gave it out that on starting up his engine in the night something had caught fire, which compelled him immediately to shut down again. The few who had seen the light, with the exception of your humble servant, accepted the doctor's explanation without a question. But I knew there had been no fire, and Syx's anxiety to spread the lie led me to believe that he had narrowly escaped giving away a vital secret. I said nothing about my suspicions, but upon inquiry I found out that an extra and pressing order for metal had arrived from the Austrian government the very day of the pretended fire, and I drew the inference that Syx, in his haste to fill the order--his supply having been drawn low--had started to work, contrary to his custom, at night, and had immediately found reason to repent his rashness. Of course, I connected the strange light with this sudden change of mind.

"My suspicion having been thus stimulated, and having been directed in a certain way, I began, from that moment to notice closely the hours during which the engine labored. At night it was always quiet, except on that one brief occasion. Sometimes it began early in the morning and stopped about noon. At other times the work was done entirely in the afternoon, beginning sometimes as late as three or four o'clock, and ceasing invariably at sundown. Then again it would start at sunrise and continue the whole day through.

"For a long time I was unable to account for these eccentricities, and the problem was not rendered much clearer, although a startling suggestiveness was added to it, when, at length, I noticed that the periods of activity of the engine had a definite relation to the age of the moon. Then I discovered, with the aid of an almanac, that I could predict the hours when the engine would be busy. At the time of new moon it worked all day; at full moon, it was idle; between full moon and last quarter, it labored in the forenoon, the length of its working hours increasing as the quarter was approached; between last quarter and new moon, the hours of work lengthened, until, as I have said, at new moon they lasted all day; between new moon and first quarter, work began later and later in the forenoon as the quarter was approached, and between first quarter and full moon the laboring hours rapidly shortened, being confined to the latter part of the afternoon, until at full moon complete silence reigned in the mill."

"Well! well!" I broke in, greatly astonished by Hall's singular recital, "you must have thought Dr. Syx was a cross between an alchemist and an astrologer."

"Note this," said Hall, disregarding my interruption, "the hours when the engine worked were invariably the hours during which the moon was above the horizon!"

"What did you infer from that?" "Of course, I inferred that the moon was directly concerned in the mystery; but how? That bothered me for a

long time, but a little light broke into my mind when I picked up, on the mountain-side, a dead bird, whose scorched feathers were bronzed with artemisium, and sometime later another similar victim of a mysterious form of death. Then came the attack on the mine and its tragic finish. I have already told you what I observed on that occasion. But, instead of helping to clear up the mystery, it rather complicated it for a time. At length, however, I reasoned my way partly out of the difficulty. Certain things which I had noticed in the Syx mill convinced me that there was a part of the building whose existence no visitor suspected, and, putting one thing with another, I inferred that the roof must be open above that secret part of the structure, and that if I could get upon a sufficiently elevated place I could see something of what was hidden there.

"At this point in the investigation I proposed to you the trip to the top of the Teton, the result of which you remember. I had calculated the angles with great care, and I felt certain that from the apex of the mountain I should be able to get a view into the concealed chamber, and into just that side of it which I wished particularly to inspect. You remember that I called your attention to a shining object underneath the circular opening in the roof. You could not make out what it was, but I saw enough to convince me that it was a gigantic parabolic mirror. I'll show you a smaller one of the same kind presently.

"Now, at last, I began to perceive the real truth, but it was so

wildly incredible, so infinitely remote from all human experience, that I hardly ventured to formulate it, even in my own secret mind. But I was bound to see the thing through to the end. It occurred to me that I could prove the accuracy of my theory with the aid of a kite. You were kind enough to lend your assistance in that experiment, and it gave me irrefragable evidence of the existence of a shaft of flying atoms extending in a direct line between Dr. Syx's pretended mine and the moon!"

"Hall!" I exclaimed, "you are mad!" My friend smiled good-naturedly, and went on with his story.

"The instant the kite shrivelled and disappeared I understood why the works were idle when the moon was not above the horizon, why birds flying across that fatal beam fell dead upon the rocks, and whence the terrible master of that mysterious mill derived the power of destruction that could wither an army as the Assyrian host in Byron's poem

"Melted like snow in the glance of the Lord."

"But how did Dr. Syx turn the flying atoms against his enemies?" I asked.

"In a very simple manner. He had a mirror mounted so that it could be turned in any direction, and would shunt the stream of metallic atoms,

heated by their friction with the air, towards any desired point. When the attack came he raised this machine above the level of the roof and swept the mob to a lustrous, if expensive, death."

"And the light at night--"

"Was the shining of the heated atoms, not luminous enough to be visible in broad day, for which reason the engine never worked at night, and the stream of volatilized artemisium was never set flowing at full moon, when the lunar globe is above the horizon only during the hours of darkness."

"I see," I said, "whence came the nuggets on the mountain. Some of the atoms, owing to the resistance of the air, fell short and settled in the form of impalpable dust until the winds and rains collected and compacted them in the cracks and crevices of the rocks."

"That was it, of course."

"And now," I added, my amazement at the success of Hall's experiments and the accuracy of his deductions increasing every moment, "do you say that you have also discovered the means employed by Dr. Syx to obtain artemisium from the moon?"

"Not only that," replied my friend, "but within the next few minutes I shall have the pleasure of presenting to you a button of moon metal,

fresh from the veins of Artemis herself."