

## BARR'S PROBLEM.

By Julian Hawthorne.

CURLING layers of tobacco-smoke swam on the still air of the study. On approaching the large lamp on the table, they were drawn upward by the heated current underneath the shade, and discharged toward the shadowed ceiling. As they dispersed, the Professor kept adding to them, drawing in warm mouthfuls of the blue vapor, and discharging it slowly from his bearded lips, while the bowl of the briar-root glowed and sent up rings and streamers; and a recurrent low chuckle in the throat of the pipe showed that it was an old friend, rich and strong, and full of potent juice.

The lamp-light glistened warmly on the backs of books, ranked round the room on their old shelves. They were comfortable, well-made books, mellowed by time and handling. They matched the furniture, which was so fashioned as to suggest sitting in cosy postures and reading them. The whole room was warm and dim in tone; the ceiling not too high, the rugs not too new, everything showing wear, but not too much. The Professor's clothes were also well-worn, yet not shabby: they were of a dull drab color, thoroughly creased at all the angles, so that no one but the Professor could have worn them comfortably, nor he have been at ease in any other. His right slipper, as the leg appertaining to it rested across his other shin, showed its down-trodden heel, and the sole curved away from the sole of the foot, revealing the sharp arch of the Professor's instep. His broad but not over-tall form lay back at ease in the leather-covered, hollow-seated chair. The hand that held the pipe was strong and shapely, with hair on the back, and on the back of the lower joint of the knuckles, and growing thick on the wrist, as far up as the shirt-cuff revealed it. A gray beard, clipped close, surmounted the Professor's broad, firm cheeks and leonine chin; high above his big square ears rose his head, its arched summit passing through the tangled and grizzled growth that clung to the sides and back. The Professor's eyes were blue, and expressed humor, penetration and sagacity. He sat facing one side of the fireplace: on the other side was a young man under thirty, who was not smoking, though he was enveloped in the clouds emanating from his older companion. He wore evening-dress,

and had the air of a gentleman conscious of his responsibilities to society and to himself: he was conscientious, correct and conventional. But, on the other hand, he was young; his present limitations might be due more to inherited stupidity and to cramping circumstances than to natural depravity: experience might give him a broader and more human development. He was, in fact, the son of highly respectable and wealthy people; he had received a thorough academic education; he had never committed a social error; he knew and believed all such things as should be matter of belief and knowledge to correct young men — and he knew and believed nothing else. In fact, he was a fool, with the potency of better things in him.

The Professor's name was Brooks. The young gentleman's name was Barr. Professor Brooks had been one of the instructors of Mr. Barr, when the latter was in the undergraduate department of the university, some years since. On Mr. Barr's return from his post-graduate European tour, he had fallen into the habit of often calling on the Professor, whose abode, near the college enclosure, was not more than a few miles from his own residence on the fashionable residence street of the neighboring city. This was the more commendable in him inasmuch as the Professor habitually used him with great freedom and even roughness, and spared not, upon occasion, to cast ridicule and contempt upon all that the Barr kind of people esteem sacred and *comme il faut*. The Professor was a humorist, of the antique type; and he possessed a fearful fascination for Barr, who did not understand him, but was man enough to try to.

It must also be revealed that Barr had fallen deeply in love with Susan Wayne, the Professor's niece, an orphan, living with her uncle in his old-fashioned house. Susan, who was nineteen, and a delightful girl, thought she loved him. But the Professor had hitherto refused to consent to a regular engagement between them.

“You are not at present, worth a decent girl's acceptance,” he said to Barr on the very evening I am writing about. “You are a babe in swaddling clothes. You have never once kicked out a leg on your own independent account. Susan agreed to tolerate you on the theory that you might turn out to be, hereafter, less of a prig and a poke than you appear now. I have yet to be satisfied that she has any grounds for her expectation. I even question your love for her. It is only her pretty outside that has attracted you.”

“No, now, really, that's too bad of you, Professor!” Barr exclaimed, a flush appearing on his smooth, comely face. “It isn't her outside a bit. I should care for her just the same, no matter what she looked like. Oh, you know I would! It's her soul, you know, her” —

"Rubbish! What if her soul inhabited the body of a nigger wench?"

Barr shuddered, but said, "It would make no difference, provided, you know, I knew her as I do now. Of course," he added conscientiously, "if her physical part had been that of the sort of person you describe, it isn't likely I should have got into such relations with her, you know" —

"The fact is, you don't know whether you care for her or not; you only think you do. What in heaven's name *do* you know, my dear boy? — really and certainly know, or believe? Do you believe in the Fourth Dimension of Space?"

"Oh, I say!" cried Barr, reproachfully. "That's just a mathematical sort of lark, you know. Nobody believes there is such a thing."

"Don't they? Well, now suppose you had a bit of cord, like those patent window cords, made in an endless loop, all in one piece. You know what I mean, don't you?"

"Just a ring of rope, isn't it? Yes, what about it?"

"Could you tie or knot it, without cutting it?"

"Why, of course I couldn't! Nobody could. You could tie a loop, but it would slip right out again. But a plain knot—that can't be done."

"You positively know and believe that? As certainly as you know you love Susan, and not merely her appearance?"

"Well, they're not exactly the sort of things one compares together, you know; still—yes—I'm as sure of one as I am of the other."

The Professor opened a drawer, and took out of it a small coil of rope, which he handed to Barr; and while the latter was examining it, he knocked the ashes out of his pipe and refilled it from his tobacco-box, sawed out of a joint of Japanese bamboo.

Barr uncoiled the rope, and found it to be precisely such an endless ring as the Professor had described to him. It was made in one piece: the strands were continuous all round, and had no point of junction. The rope was about one-third of an inch in diameter, and perhaps four feet in length. It was new and rather stiff, and in all respects save one, a very commonplace piece of rope.

But in one respect it was extraordinary. A plain knot was loosely tied in it. It was an ordinary knot: but how did it get there?

When Barr recognized the miraculous character of the phenomenon, his mind instinctively leaned to the only commonplace solution possible.

"The knot was tied when the rope was made," said he.

"Well, no," replied the Professor. "When I bought that circle of rope, it had no knot in it. I soaked it in a solution of alum, and then gave it into the hands of a certain person. This person gathered it up

in a sort of ball, and held it in her hands for a moment. Then she shook it out again, and the knot was there, as you see it now. I applied the chemical test for alum, and obtained the reaction. This, you understand, was in order to guard against the possibility of substitution. The alum, as you see, leaves no visible traces on the rope. You also see the knot."

Yes, Barr saw the knot. He pulled it open, passed his hand through it, pulled it together again. It was a positive, ordinary, undeniable knot. He looked up at the Professor in helpless bewilderment.

"That knot, you perceive," the latter remarked, "could not have been tied there by any means known practically to you or me. In order to tie it, it was necessary to make a movement in the Fourth Dimension. We can understand the theory, and we can recognize the result; the only thing we can't do is to follow the movement. But you were saying a moment ago, that you don't believe in the Fourth Dimension. On the other hand, you did believe that you loved Susan Wayne. What do you believe now?"

Barr was silent for a while, and then said, "There may be a Fourth Dimension, Professor; but I should love Susan just the same if there were no dimensions at all."

"We'll see about that!" returned the other.

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"Did you ever happen to hear it suggested," asked the Professor after a pause, during which he had kept his eyes steadfastly fixed upon Barr's ingenuous countenance, "that if this planet (and of course the rest of the natural universe with it) were to change its dimensions all at once—say, from its present size to that of an orange, or *vice versa*, not a soul of us who inhabit it could ever be aware of the alteration? Physical size being strictly relative, you know, there is no means of determining the size of anything except by comparing it with a given standard."

"I think I understand what you mean," said Barr. "Yes, of course, if everything changes to the same scale, we wouldn't any of us know it. It would all seem just the same as it was before."

"Exactly; unless, by the way, you should happen to get switched outside of the universe at the instant of the change, and not get back till after it was over. But I was about to say—would you be surprised to hear that the phenomenon in question is not a mere hypothesis, but an actual fact; and that it takes place once every four-and-twenty hours, with the regularity of the motion of a pendulum. Assuming, then, that you are six feet high to-day, you will be (by to-day's standard, mind you!) only six inches high to-morrow; and it is only because the foot-rule shrinks with you, that you are not aware of it."

"If you say it is so, Professor, I won't say it can't be so; after seeing

that knot, I can believe pretty nearly anything — except that anything will alter my feeling for Susan, you know.”

“Speaking of Susan, she may be of use to us in the matter,” the Professor remarked. He rang the bell, and told the servant to request Miss Wayne to come to the study.

During the interval that elapsed before Susan's appearance, the Professor talked quietly to Barr, who sat motionless in his chair, his gaze directed upon the polished ivory cupola surmounting the miniature Chinese pagoda on the mantel-piece; which, as he contemplated it, seemed alternately to diminish and to expand in size, now appearing large enough to cover an acre of ground, and now just big enough to contain a manikin of the length of one's hand. Indeed, he now saw a Mongolian countenance peeping out of one of the windows; and it occurred to him that, if the world really did swell and shrink as the Professor had suggested, this Chinaman must, in a certain way, be alive.

“Assuming that the Fourth Dimension exists,” the Professor was saying, “and that a knot, otherwise impossible can be tied in it, it follows that you or I may also avail ourselves of its facilities. Matter, philosophically speaking, is only a temporary mode of sensation. If the mind can be convinced that translation into this Dimension be practicable, it is obvious that it would carry the body with it. There are states of trance in which the mind seems absolutely to command the physical part, and it is in this direction that we should look for results. Now, Susan, as you know, has powers as a sensitive, and it was she, in fact, who was the agent in the production of that knot. She offers, therefore, a promising field for experiment.”

At this juncture, Susan opened the door and came in. She was dressed in the same toilette of soft cream-colored *crépe* that she had worn at dinner. She had the loveliness and fragrance of a damask rose, and no one who looked at her could have blamed Barr for believing that nothing could alter his devotion to her.

“Mercy, uncle, what a lot of tobacco-smoke!” she cried out.

“Susan,” said the Professor gravely, “I have called you to assist me in the conversion of a sceptic. You are to help me demonstrate to him the limitations of credulity and the extent of knowledge. He has seen the knot: but we must go a step farther to complete his enlightenment. The man who marries you must learn how to free his mind from prejudice, and to distrust the stability of his own prepossessions. You will, if you please, move into the Fourth Dimension.”

Susan, through the blue vapor of the tobacco-smoke, cast one quick glance at Barr. There was something in the look that spoke of compassion for him and of a misgiving — whether on his account or hers he

could not decide. The next moment she averted her eyes and stood erect, like a charming statue cunningly wrought in ivory. The light from the lamp fell full upon her. She stood in the broad open space between the table and the door, at the intersection of two bands of red and yellow in the pattern of the rug.

"Now, Barr, pay close attention," said the Professor: and he went on, accompanying the word by the action. "She stands there, you see, at the meeting of the ways — the point of no dimension. First, by the motion of my right hand, I induce the trance. Next, by this slow up-and-down motion, I bring her to the interior respiration, which is attainable by only a very few sensitives, and which is indispensable to what follows. It is hardly perceptible, you observe; but it is the master-key between mind and matter. Combined with the proper symbolic movements of the body and applications of the thought, it evaporates flesh and blood as the heat of the sun drinks water. Now I beckon her to come forward in the first direction — the linear. She is now living the life of linear extension alone; she is unconscious of anything except as it lies in the direction and on the plane of that mode of existence. Now, I wave her to the left: she is now living in the surface, or plane: the life of two dimensions. To reach the third, or that in which our own universe exists, it is only necessary to traverse the diagonal of the last two movements, answering to the ascending movement. And now, having passed through all the preliminary stages in their logical succession, she is ready to take the final step, which will, of course, remove her from our field of vision."

"Remove her from our field of vision?"

"You will see for yourself. It is now within half a minute of nine o'clock," said the Professor, consulting his watch. "While the clock in the corner there is striking the hour, the translation will take place. I wish you to scrutinize the phenomenon as closely as possible, so as to catch, if you can, the direction of the movement that carries her out of our sphere. Ah! there goes the clock. You may rise if you like, and go up to her."

Barr, feeling strangely perplexed, as if he were on the threshold of an unknown world, got to his feet and made one or two paces in the direction of the spot where Susan was standing. Meanwhile the clock was striking, slowly, but with a peculiarly penetrating and vibrating tone. These vibrations seemed to be sympathetically reflected in Susan's body. She shivered — wavered — and at each successive stroke a certain indistinctness drifted over her, as if the wreaths of blue tobacco-smoke were dissolving her into their own vaporous substance. But just as the ninth stroke was about to sound, and Barr, peering through the smoke clouds, had assured himself that Susan was still

there, as solid and sweet as ever—in that instant she vanished like the sudden extinction of a soap-bubble. She had retired into the Fourth Dimension!

“It so happens,” the Professor was saying, when Barr began to recover a little from the dizziness and stupefaction caused by this catastrophe, “that the time of Susan’s disappearance — she is, of course, still here with us, and can see us, though to us invisible — is synchronous with that shrinkage of the universe of which we were speaking a few minutes ago. But, since she has, as it were, stepped outside of the ordinary spatial universe, she is not subject to the change in size which has affected everything else. I will now recall her from the region in which she is secluded, and she will afford a sensible demonstration of the theory I outlined to you.”

Nothing was more extraordinary in all this than the matter-of-fact, monotonous fluency of the Professor’s speech. It was not like his ordinary conversational manner: it recalled to Barr the learned gentleman’s harangues to the class in the lecture-room, in the old days. A curious sense of unreality pervaded the whole transaction. Probably the mind takes refuge in a species of paralysis of credulity, when confronted with miracle. The violence done to probability and experience by Susan’s disappearance had thrown the machinery of Barr’s intellect out of gear, so that the whole affair affected him like a dream. No dream so fantastic and preposterous, however, had ever found its way into Barr’s honest and unimaginative brain.

The Professor had again been making some passes with his hands: he now stooped for a moment, and seemed to take something off the floor. He then stepped to the mantelpiece, where stood the Chinese pagoda. He muttered a few words, the purport of which Barr did not catch, and finally returned to his chair, composedly resuming his pipe.

“But where is Susan?” faltered the young man.

“Susan is all right. I have just spoken with her. She has returned to the Third Dimension, and you will see her in a moment. But she wished me to prepare you beforehand for the meeting. She fears you might otherwise receive a shock which” —

“Good heavens, Professor! Has she met with an accident?”

“No, no: sit down. I tell you she’s all right. Besides, as I explained to her, you have repeatedly declared that no merely physical modifications could alter in the least your feelings for her. You still adhere to that declaration, I presume?”

“Of course I do! But how — where is she? Has anything” —

“My dear boy, she is in this room. She is perfectly well. She is the same Susan, to a hair, that she was ten minutes ago.”

"But if she's in this room, why don't I see her?"

"Simply because she is concealing herself, for the moment, behind (or I shall say, within) an article of furniture: I will point it out to you directly. But first I must ask you to remember that, since you saw Susan, the universe has, as I warned you it was about to do, undergone a material change in dimensions. But inasmuch as Susan chanced at that moment not to be in the universe, she did not participate in this change. In other words, she is now actually of the same stature that she was when she first entered this room: whereas you and I, and everything else, have very largely increased. Do you understand me?"

"Professor Brooks, what has happened?" said Barr, turning very pale, and directing a horror-stricken gaze at the other. "I am actually afraid to think of what you may mean? Tell me at once — I can't bear this suspense another moment!"

"Keep calm, my dear Barr: be reasonable. Nothing is altered, except the unit of measurement; and love being, as you say, a matter of souls, in no way dependent on spatial considerations, you need feel no uneasiness. Susan has hitherto appeared to be about the height of your ear — I mean, of course, about the height above the ground that your ear is: she now appears to be about the size of her figure in that cabinet photograph she gave you the other day. That's all, positively — not really worth mentioning. Go to her, and reassure her. You'll find her in the Chinese pagoda on the mantelpiece."

"Susan in the Chinese pagoda!"

The intensity and confusion of Barr's feelings blurred his faculties: everything seemed like a dream. He seemed to himself to stand apart, and to watch curiously his own actions, and the incredible things that happened. He saw himself walk up to the mantelpiece, and look at the pagoda. His eyes were attracted towards the window at which he had seen the face of the ivory Chinaman: a face was still there, but it was not of a Mongolian caste; it was Anglo-Saxon; it was American; it was feminine; yes, it was the living face of a beautiful, little young lady, whose features had, for many months past, been stamped on Barr's heart. The tiny, sparkling eyes of this fairy countenance met his own stupefied gaze: the face disappeared from the window — in another moment a lilliputian maiden was standing in the pagoda doorway. She was dressed in cream-colored *crépe*, of texture finer than cobweb; her hair was like a wreath of dark mist on her graceful head; her white hands were microscopic marvels a third of an inch in length, and the inconceivable satin slippers on her feet could have been boxed up in a hickory nutshell. The doorway in which she stood was barely six inches in height, and the top of this little creature's head fell short of the lintel by half an inch.



"Put me on the table, please!" she said, holding out her arms; and the voice, though minute as the rest of her, was still the soft, clear, unmistakable voice that had never failed to make Barr's pulses throb — the voice of Susan Wayne! Did it make his pulses throb now? Doubtless it did, and with a poignant emotion, too. But it was an emotion of consternation, of anguish, of horror, of repulsion; whatever it was, it was no longer love.

Susan was sitting swinging her feet over the edge of the dictionary, on which she had climbed by way of the paper-weight. She looked flushed, and had apparently been crying. Barr sat in a low easy-chair, his cheeks pale, his hair disordered, his eyes fixed and glaring, his shirt-front rumpled, his hands in his trousers pockets. He was a portrait of Despair, in evening-dress. The Professor, with his pipe, was as self-possessed as usual. For half an hour or more he had been sustaining an active argument with Barr, and had defeated him on every point. He had proved to him that he had not a rational leg to stand on, and moreover that he had involved himself in hopeless self-contradictions.

"If you were an avowed materialist," he was saying, "if you denied the existence of the soul, or of anything that was not physically cognizable, I could make some allowances for your present attitude. You had contracted for a piece of female goods weighing one hundred and twenty pounds, and you would naturally object to something weighing scarcely as many drachms. But for a man, whose professions are so spiritual as yours, you are incomprehensible. You would not, I suppose, cease to love Susan if she stood at a distance of forty paces from you; and yet, at that distance, she would appear just the size she does now. Her nature, her character, her temperament, her memory, are the same now that they were at dinner-time; she even retains the same sentiments towards you that she then had. You find nothing revolting in her portrait, which is just life-size (as she is now), and yet I'll leave it to any one if she isn't infinitely prettier and more precious than any possible portrait. What is it about her, I beg to ask, that you loved? Was it her pounds avoirdupois, or her superficies in square feet and inches? — for, upon my word, if it wasn't that, I should like you to inform me what in the name of mystery it was!"

"I can't explain myself, or justify myself, Professor," replied the unhappy young man, in husky tones. "Nobody ever had anything like this happen to him before. I love Susan just the same as ever I did, of course; but I can't love that little creature that is sitting on the dictionary there — it's ridiculous! I don't know how or why; but it's against nature. I suppose she has got the same soul she had, and so have I; but, as long as we live in this world, the soul is not everything.

We're not made on the same scale: and that separates us. You say she looks as she would forty yards off: well, then, that's the distance we are apart; and we can never get nearer. You may call it absurd, and so it is, I suppose; but there must be a meaning in it, somehow: if there was no reason for my feeling as I do, I shouldn't feel so! If she and I were souls and nothing else, I'm sure we should be of the same size, or what answers to the same size, with spirits. Now, it is something as if one of us were dead, or living on another planet. We can't come near each other: we can't be anything to each other; and so, we can't love each other. Besides, it can't be true that she is the same as she was before. Such a difference in the size of her body can't have taken place without a corresponding change in her mind and soul. I can't prove it, but I feel that it must be so. I can love her picture, because I know that it is only a representation of something real, which it's right for me to love; but I can't love that little creature there, because she doesn't represent herself—she *is* herself, and that's all she ever can be!"

"Upon my word, Barr, you have a very unceremonious way of speaking of 'that little creature'!" remarked the Professor. "I must request you to remember that she is Miss Susan Wayne, and my niece. Whatever your sentiments towards her may be, she is just as dear to me as she ever was, and I insist upon her being treated with respect. Susan, my dear," he added, "what have you to say on this subject? Are you convinced that Mr. Barr is not worthy your regard?"

"I think, uncle," replied Susan, with spirit, "that he has said what is just right, and just what I should have said in his place. And I don't think your experiment is fair, and I wish you would stop it. No man, who is a man, could pretend to care for such a little midget as you have made me appear to him. I love him better than ever, and I wish you'd please make everything as it was before. If you don't, I'll never forgive you!"

The Professor chuckled in his beard, and laid down his pipe. "Well, Barr," he said, "since she pleads for you, I'll treat you better than you deserve. But let this be a lesson to you. Don't allow yourself to imagine that finite and mortal man can safely assert that even the strongest inclinations of his nature are unalterable and everlasting. Believe, rather, that we are a very frail and uncertain lot of creatures, who know neither one another nor our own selves. The man who plunges into matrimony with the idea that the mere ardor of his passion is going to keep him faithful through life, is arrogating more to the strength of human constancy than our mortal limitations warrant. It will be more prudent and more reverential to pray every morning for virtue and manhood enough to carry you through the next four-and-twenty hours. The

Fourth Dimension in Space may be a mere mathematical fancy, and the periodical shrinking and expansion of the universe only a freak of imagination; but there are plenty of things to be met with in life that will test your strength and fidelity quite as severely. And from those trials and disappointments there will be no such easy deliverance as I am able — luckily for you — to give you now!”

So saying, the Professor clapped his hands smartly, and, taking his handkerchief from his pocket, waved it thrice before Barr's eyes.

These apparently inconsequent demonstrations were followed by a singular result. Barr had a sensation as if all the nerves of his skin were subjected to a current of icy air, while the sight of his eyes grew dark and indistinct, and then cleared slowly; and the first object his gaze rested upon was Susan, a lilliputian no longer, but of the normal stature of women of this planet, and looking in all respects more lovely and lovable than ever. Nor was she any longer sitting on the dictionary. She was standing on the floor, and was regarding him with a shy and wistful expression, which fetched his heart right up into his throat.

“Susan!” he cried. “Has it been a dream? Thank God you are yourself!”

“It has been quite a successful experiment in hypnotic suggestion,” said the Professor. “You are a good subject, Barr; though perhaps you hardly do yourself justice as a philosophical and ethical controversialist. You were only in the lighter stage — possibly the deeper condition might develop further mental powers in you, though it could hardly render you more susceptible to hints from the experimenter.”

Barr signaled his return to his own independent mind by conceiving and carrying out on the spot a notable bit of strategy. He stepped quickly up to Susan, put his arms round her, and kissed her with all the vigor and emphasis that a long and painful separation could justify.

“I may be an ass,” he said to the Professor over his shoulder, while still retaining the blushing Susan in his embrace, “but I am sensible enough to know that nothing can ever again make me say I don't love Susan; and I won't let go of her until you agree to let me marry her next month.”

“I leave it to Susan,” replied the Professor.

Susan hid her face on Barr's shoulder.

“Then I leave Susan to you,” added the old gentleman, with a sigh. “But,” he added, “don't forget that marriage brings about changes and miracles greater than any you have seen to-night. And should either of you become a lilliput hereafter, I'll venture to prophesy it won't be the wife!”