Chapter 21 The Professor's Lecture

'In Science-- in fact, in most things--it is usually best to begin at the beginning. In some things, of course, it's better to begin at the other end. For instance, if you wanted to paint a dog green, it might be best to begin with the tail, as it doesn't bite at that end. And so--"

"May I help oo?" Bruno interrupted.

"Help me to do what?" said the puzzled Professor, looking up for a moment, but keeping his finger on the book he was reading from, so as not to lose his place.

"To paint a dog green!" cried Bruno. "Oo can begin wiz its mouf, and I'll--"

"No, no!" said the Professor. "We haven't got to the Experiments yet. And so", returning to his note-book, "I'll give you the Axioms of Science. After that I shall exhibit some Specimens. Then I shall explain a Process or two. And I shall conclude with a few Experiments. An Axiom, you know, is a thing that you accept without contradiction. For instance, if I were to say 'Here we are'', that would be accepted without any contradiction, and it's a nice sort of remark to begin a conversation with. So it would be an Axiom. Or again, supposing I were to say, 'Here we are not!', that would be--"

"--a fib!" cried Bruno.

"Oh, Bruno!" said Sylvie in a warning whisper. "Of course it would be an Axiom, if the Professor said it!"

"--that would be accepted, if people were civil," continued the Professor; "so it would be another Axiom."

"It might be an Axledum," Bruno said: "but it wouldn't be true!"

"Ignorance of Axioms", the Lecturer continued, "is a great drawback in life. It wastes so much time to have to say them over and over again. For instance, take the Axiom, 'Nothing is greater than itself'; that is, 'Nothing can contain itself.' How often you hear people

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say 'He was so excited, he was quite unable to contain himself.' Why, of course he was unable! The excitement had nothing to do with it!"

"I say, look here, you know!" said the Emperor, who was getting a little restless. "How many Axioms are you going to give us? At this rate, we sha'n't get to the Experiments till to-morrow-week!"

"Oh, sooner than that, I assure you!" the Professor replied, looking up in alarm. "There are only," (he referred to his notes again) "only two more, that are really necessary."

"Read 'em out, and get on to the Specimens," grumbled the Emperor.

"The First Axiom", the Professor read out in a great hurry, "consists of these words, 'Whatever is, is.' And the Second consists of these words, 'Whatever isn't, isn't.' We will now go on to the Specimens. The first tray contains Crystals and other Things." He drew it towards him, and again referred to his notebook. "Some of the labels--owing to insufficient adhesion--" Here he stopped again, and carefully examined the page with his eye-glass. "I ca'n't read the rest of the sentence," he said at last, "but it means that the labels have come loose, and the Things have got mixed--"

"Let me stick 'em on again!" cried Bruno eagerly, and began licking them, like postage-stamps, and dabbing them down upon the Crystals and the other Things. But the Professor hastily moved the tray out of his reach. "They might get fixed to the wrong Specimens, you know!" he said.

"Oo shouldn't have any wrong peppermints in the tray!" Bruno boldly replied. "Should he, Sylvie?"

But Sylvie only shook her head.

The Professor heard him not. He had taken up one of the bottles, and was carefully reading the label through his eye-glass. "Our first Specimen " he announced, as he placed the bottle in front of the other Things, "is-- that is, it is called--" here he took it up, and examined the label again, as if he thought it might have changed since he last saw it, "is called Aqua Pura--common water--the fluid that cheers--"

"Hip! Hip! Hip!" the Head-Cook began enthusiastically.

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"--but not inebriates!" the Professor went on quickly, but only just in time to check the "Hooroar!" which was beginning.

"Our second Specimen", he went on, carefully opening a small jar, "is--" here he removed the lid, and a large beetle instantly darted out, and with an angry buzz went straight out of the Pavilion, "--is--or rather, I should say," looking sadly into the empty jar, "it was-- a curious kind of Blue Beetle. Did anyone happen to remark--as it went past--three blue spots under each wing?"

Nobody had remarked them.

"Ah, well!" the Professor said with a sigh. "It's a pity. Unless you remark that kind of thing at the moment, it's very apt to get overlooked! The next Specimen, at any rate, will not fly away! It is--in short, or perhaps, more correctly, at length--an Elephant. You will observe--" Here he beckoned to the Gardener to come up on the platform, and with his help began putting together what looked like an enormous dog-kennel, with short tubes projecting out of it on both sides.

"But we've seen Elephants before," the Emperor grumbled.

"Yes, but not through a Megaloscope!" the Professor eagerly replied. "You know you ca'n't see a Flea, properly, without a magnifying-glass--what we call a Microscope. Well, just in the same way, you ca'n't see an Elephant, properly--without a minimifying-glass. There's one in each of these little tubes. And this is a Megaloscope The Gardener will now bring in the next Specimen. Please open both curtains, down at the end there, and make way for the Elephant!"

There was a general rush to the sides of the Pavilion and all eyes were turned to the open end, watching for the return of the Gardener, who had gone away singing "He thought he saw an Elephant That practiced on a Fife!" There was silence for a minute: and then his harsh voice was heard again in the distance. "He looked again--come up then! He looked again, and found it was--woe back! and found it was A letter from his-- make way there! He's a-coming!"

And in marched or waddled--it is hard to say which is the right word--an Elephant, on its hind-legs, and playing on an enormous fife which it held with its fore-feet.

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The Professor hastily threw open a large door at the end of the Megaloscope, and the huge animal, at a signal from the Gardener, dropped the fife, and obediently trotted into the machine, the door of which was at once shut by the Professor. "The Specimen is now ready for observation!" he proclaimed. "It is exactly the size of the common Mouse--Mus Communis!"

There was a general rush to the tubes, and the spectators watched with delight the minikin creature, as it playfully coiled its trunk round the Professor's extended finger, finally taking its stand upon the palm of his hand while he carefully lifted it out, and carried it off to exhibit to the Imperial party.

"Isn't it a darling?" cried Bruno. "May I stroke it, please? I'll touch it welly gently!"

The Empress inspected it solemnly with her eye-glass. "It is very small," she said in a deep voice. "Smaller than elephants usually are, I believe?"

The Professor gave a start of delighted surprise. "Why, that's true!" he murmured to himself. Then louder, turning to the audience, "Her Imperial Highness has made a remark which is perfectly sensible!" And a wild cheer arose from that vast multitude.

"The next Specimen", the Professor proclaimed, after carefully placing the little elephant in the tray, among the Crystals and other things, "is a Flea, which we will enlarge for the purposes of observation." Taking a small pill-box from the tray, he advanced to the Megaloscope, and reversed all the tubes. "The Specimen is ready!" he cried, with his eye at one of the tubes, while he carefully emptied the pill-box through a little hole at the side. "It is now the size of the Common Horse--Equis Communis!

There was another general rush, to look through the tubes, and the Pavilion rang with shouts of delight; through which the Professor's anxious tones could scarcely be heard. "Keep the door of the Microscope shut!" he cried. "If the creature were to escape, this size, it would--" But the mischief was done. The door had swung open, and in another moment the Monster had got out, and was trampling down the terrified, shrieking spectators.

But the Professor's presence of mind did not desert him. "Undraw those curtains!" he shouted. It was done. The Monster gathered its legs together, and in one tremendous bound vanished into the sky.

"Where is it?" said the Emperor, rubbing his eyes.

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"In the next Province, I fancy," the Professor replied. "That jump would take it at least five miles! The next thing is to explain a Process or two. But I find there is hardly room enough to operate--the smaller animal is rather in my way--"

"Who does he mean?" Bruno whispered to Sylvie.

"He means you!" Sylvie whispered back. "Hush!"

"Be kind enough to move--angularly--to this corner," the Professor said, addressing himself to Bruno.

Bruno hastily moved his chair in the direction indicated. "Did I move angrily enough?" he inquired. But the Professor was once more absorbed in his Lecture, which he was reading from his note-book.

"I will now explain the process of--the name is blotted, I'm sorry to say. It will be illustrated by a number of-- of--" here he examined the pages for some time, and at last said "It seems to be either 'Experiments' or 'Specimens' "

"Let it be Experiments," said the Emperor. "We've seen plenty of Specimens."

"Certainly, certainly!" the Professor assented. "We will have some Experiments."

"May I do them?" Bruno eagerly asked.

"Oh dear no!" The Professor looked dismayed. "I really don't know what would happen if you did them!"

"Nor nobody doosn't know what'll happen if oo doos them!" Bruno retorted.

"Our First Experiment requires a Machine. It has two knobs--only two--you can count them, if you like. "

The Head-Cook stepped forwards, counted them, and retired satisfied.

"Now you might press those two knobs together--but that's not the way to do it. Or you might turn the Machine upside-down--but that's not the way to do it!"

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"What are the way to do it?" said Bruno, who was listening very attentively.

The Professor smiled benignantly. "Ah, yes!" he said, in a voice like the heading of a chapter. "The Way To Do It! Permit me!" and in a moment he had whisked Bruno upon the table. "I divide my subject", he began, "into three parts--"

"I think I'll get down!" Bruno whispered to Sylvie. "It aren't nice to be divided!"

"He hasn't got a knife, silly boy!" Sylvie whispered in reply. "Stand still! You'll break all the bottles!"

"The first part is to take hold of the knobs," putting them into Bruno's hands. "The second part is--" Here he turned the handle, and, with a loud "Oh!", Bruno dropped both the knobs, and began rubbing his elbows.

The Professor chuckled in delight. "It had a sensible effect. Hadn't it?" he enquired.

"No, it hadn't a sensible effect!" Bruno said indignantly. "It were very silly indeed. It jingled my elbows, and it banged my back, and it crinkled my hair, and it buzzed among my bones!"

"I'm sure it didn't!" said Sylvie. "You're only inventing,"

"Oo doesn't know nuffin about it!" Bruno replied. "Oo wasn't there to see. Nobody ca'n't go among my bones. There isn't room!"

"Our Second Experiment", the Professor announced, as Bruno returned to his place, still thoughtfully rubbing his elbows, "is the production of that seldom-seen-but greatly-to-be-admired phenomenon, Black Light! You have seen White Light, Red Light, Green Light, and so on: but never, till this wonderful day, have any eyes but mine seen Black Light! This box", carefully lifting it upon the table, and covering it with a heap of blankets, "is quite full of it. The way I made it was this--I took a lighted candle into a dark cupboard and shut the door. Of course the cupboard was then full of Yellow Light. Then I took a bottle of Black ink, and poured it over the candle: and, to my delight, every atom of the Yellow Light turned Black! That was indeed the proudest moment of my life! Then I filled a box with it. And now --would anyone like to get under the blankets and see it?"

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Dead silence followed this appeal: but at last Bruno said "I'll get under, if it won't jingle my elbows."

Satisfied on this point, Bruno crawled under the blankets, and, after a minute or two, crawled out again, very hot and dusty, and with his hair in the wildest confusion.

"What did you see in the box?" Sylvie eagerly enquired.

"I saw nuffin!" Bruno sadly replied. "It were too dark!"

He has described the appearance of the thing exactly!" the Professor exclaimed with enthusiasm. "Black Light and Nothing, look so extremely alike, at first sight, that I don t wonder he failed to distinguish them! We will now proceed to the Third Experiment."

The Professor came down, and led the way to where a post had been driven firmly into the ground. To one side of the post was fastened a chain, with an iron weight hooked on to the end of it, and from the other side projected a piece of whalebone, with a ring at the end of it. This is a most interesting Experiment!" the Professor announced. "It will need time, I'm afraid: but that is a trifling disadvantage. Now observe. If I were to unhook this weight, and let go, it would fall to the ground. You do not deny that?"

Nobody denied it.

"And in the same way, if I were to bend this piece of whalebone round the post--thus--and put the ring over this hook--thus--it stays bent: but, if I unhook it, it straightens itself again. You do not deny that?"

Again, nobody denied it.

"Well, now, suppose we left things just as they are, for a long time. The force of the whalebone would get exhausted, you know, and it would stay bent, even when you unhooked it. Now, why shouldn't the same thing happen with the weight? The whalebone gets so used to being bent, that it ca'n't straighten itself any more. Why shouldn't the weight get so used to being held up, that it ca'n't fall any more? That's what I want to know!"

"That's what we want to know!" echoed the crowd.

"How long must we wait?" grumbled the Emperor.

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The Professor looked at his watch. "Well, I think a thousand years will do to begin with," he said. "Then we will cautiously unhook the weight: and, if it still shows (as perhaps it will) a slight tendency to fall, we will hook it on to the chain again, and leave it for another thousand years."

Here the Empress experienced one of those flashes of Common Sense which were the surprise of all around her. "Meanwhile there'll be time for another Experiment," she said.

"There will indeed!" cried the delighted Professor. "Let us return to the platform, and proceed to the Fourth Experiment!"

"For this concluding Experiment, I will take a certain Alkali, or Acid--I forget which. Now you'll see what will happen when I mix it with Some--" here he took up a bottle, and looked at it doubtfully, "--when I mix it with--with Something--"

Here the Emperor interrupted. "What's the name of the stuff?" he asked.

"I don't remember the name," said the Professor: "and the label has come off." He emptied it quickly into the other bottle, and, with a tremendous bang, both bottles flew to pieces, upsetting all the machines, and filling the Pavilion with thick black smoke. I sprang to my feet in terror, and--and found myself standing before my solitary hearth, where the poker, dropping at last from the hand of the sleeper, had knocked over the tongs and the shovel, and had upset the kettle, filling the air with clouds of steam. With a weary sigh, I betook myself to bed.

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