

## Chapter 3

### The Building of the sphere

I remember the occasion very distinctly when Cavor told me of his idea of the sphere. He had had intimations of it before, but at the time it seemed to come to him in a rush. We were returning to the bungalow for tea, and on the way he fell humming. Suddenly he shouted, "That's it! That finishes it! A sort of roller blind!"

"Finishes what?" I asked.

"Space--anywhere! The moon."

"What do you mean?"

"Mean? Why--it must be a sphere! That's what I mean!"

I saw I was out of it, and for a time I let him talk in his own fashion. I hadn't the ghost of an idea then of his drift. But after he had taken tea he made it clear to me.

"It's like this," he said. "Last time I ran this stuff that cuts things

off from gravitation into a flat tank with an overlap that held it down. And directly it had cooled and the manufacture was completed all that uproar happened, nothing above it weighed anything, the air went squirting up, the house squirted up, and if the stuff itself hadn't squirted up too, I don't know what would have happened! But suppose the substance is loose, and quite free to go up?"

"It will go up at once!"

"Exactly. With no more disturbance than firing a big gun."

"But what good will that do?"

"I'm going up with it!"

I put down my teacup and stared at him.

"Imagine a sphere," he explained, "large enough to hold two people and their luggage. It will be made of steel lined with thick glass; it will contain a proper store of solidified air, concentrated food, water distilling apparatus, and so forth. And enamelled, as it were, on the outer steel--"

"Cavorite?"

"Yes."

"But how will you get inside?"

"There was a similar problem about a dumpling."

"Yes, I know. But how?"

"That's perfectly easy. An air-tight manhole is all that is needed. That, of course, will have to be a little complicated; there will have to be a valve, so that things may be thrown out, if necessary, without much loss of air."

"Like Jules Verne's thing in A Trip to the Moon."

But Cavor was not a reader of fiction.

"I begin to see," I said slowly. "And you could get in and screw yourself up while the Cavorite was warm, and as soon as it cooled it would become impervious to gravitation, and off you would fly--"

"At a tangent."

"You would go off in a straight line--" I stopped abruptly. "What is to prevent the thing travelling in a straight line into space for ever?" I asked. "You're not safe to get anywhere, and if you do--how will you get back?"

"I've just thought of that," said Cavor. "That's what I meant when I said the thing is finished. The inner glass sphere can be air-tight, and, except for the manhole, continuous, and the steel sphere can be made in sections, each section capable of rolling up after the fashion of a roller blind. These can easily be worked by springs, and released and checked by electricity conveyed by platinum wires fused through the glass. All that is merely a question of detail. So you see, that except for the thickness of the blind rollers, the Cavorite exterior of the sphere will consist of windows or blinds, whichever you like to call them. Well, when all these windows or blinds are shut, no light, no heat, no gravitation, no radiant energy of any sort will get at the inside of the sphere, it will fly on through space in a straight line, as you say. But open a window, imagine one of the windows open. Then at once any heavy body that chances to be in that direction will attract us--"

I sat taking it in.

"You see?" he said.

"Oh, I see."

"Practically we shall be able to tack about in space just as we wish. Get attracted by this and that."

"Oh, yes. That's clear enough. Only--"

"Well?"

"I don't quite see what we shall do it for! It's really only jumping off the world and back again."

"Surely! For example, one might go to the moon."

"And when one got there? What would you find?"

"We should see--Oh! consider the new knowledge."

"Is there air there?"

"There may be."

"It's a fine idea," I said, "but it strikes me as a large order all the same. The moon! I'd much rather try some smaller things first."

"They're out of the question, because of the air difficulty."

"Why not apply that idea of spring blinds--Cavorite blinds in strong steel cases--to lifting weights?"

"It wouldn't work," he insisted. "After all, to go into outer space is not so much worse, if at all, than a polar expedition. Men go on polar

expeditions."

"Not business men. And besides, they get paid for polar expeditions. And if anything goes wrong there are relief parties. But this--it's just firing ourselves off the world for nothing."

"Call it prospecting."

"You'll have to call it that.... One might make a book of it perhaps," I said.

"I have no doubt there will be minerals," said Cavor.

"For example?"

"Oh! sulphur, ores, gold perhaps, possibly new elements."

"Cost of carriage," I said. "You know you're not a practical man. The moon's a quarter of a million miles away."

"It seems to me it wouldn't cost much to cart any weight anywhere if you packed it in a Cavorite case."

I had not thought of that. "Delivered free on head of purchaser, eh?"

"It isn't as though we were confined to the moon."

"You mean?"

"There's Mars--clear atmosphere, novel surroundings, exhilarating sense of lightness. It might be pleasant to go there."

"Is there air on Mars?"

"Oh, yes!"

"Seems as though you might run it as a sanatorium. By the way, how far is Mars?"

"Two hundred million miles at present," said Cavor airily; "and you go close by the sun."

My imagination was picking itself up again. "After all," I said, "there's something in these things. There's travel--"

An extraordinary possibility came rushing into my mind. Suddenly I saw, as in a vision, the whole solar system threaded with Cavorite liners and spheres deluxe. "Rights of pre-emption," came floating into my head--planetary rights of pre-emption. I recalled the old Spanish monopoly in American gold. It wasn't as though it was just this planet or that--it was all of them. I stared at Cavor's rubicund face, and suddenly my imagination was leaping and dancing. I stood up, I walked

up and down; my tongue was unloosened.

"I'm beginning to take it in," I said; "I'm beginning to take it in." The transition from doubt to enthusiasm seemed to take scarcely any time at all. "But this is tremendous!" I cried. "This is Imperial! I haven't been dreaming of this sort of thing."

Once the chill of my opposition was removed, his own pent-up excitement had play. He too got up and paced. He too gesticulated and shouted. We behaved like men inspired. We were men inspired.

"We'll settle all that!" he said in answer to some incidental difficulty that had pulled me up. "We'll soon settle that! We'll start the drawings for mouldings this very night."

"We'll start them now," I responded, and we hurried off to the laboratory to begin upon this work forthwith.

I was like a child in Wonderland all that night. The dawn found us both still at work--we kept our electric light going heedless of the day. I remember now exactly how these drawings looked. I shaded and tinted while Cavor drew--smudged and haste-marked they were in every line, but wonderfully correct. We got out the orders for the steel blinds and frames we needed from that night's work, and the glass sphere was designed within a week. We gave up our afternoon conversations and our old routine altogether. We worked, and we slept and ate when we could work no longer



for hunger and fatigue. Our enthusiasm infected even our three men, though they had no idea what the sphere was for. Through those days the man Gibbs gave up walking, and went everywhere, even across the room, at a sort of fussy run.

And it grew--the sphere. December passed, January--I spent a day with a broom sweeping a path through the snow from bungalow to laboratory--February, March. By the end of March the completion was in sight. In January had come a team of horses, a huge packing-case; we had our thick glass sphere now ready, and in position under the crane we had rigged to sling it into the steel shell. All the bars and blinds of the steel shell--it was not really a spherical shell, but polyhedral, with a roller blind to each facet--had arrived by February, and the lower half was bolted together. The Cavorite was half made by March, the metallic paste had gone through two of the stages in its manufacture, and we had plastered quite half of it on to the steel bars and blinds. It was astonishing how closely we kept to the lines of Cavor's first inspiration in working out the scheme. When the bolting together of the sphere was finished, he proposed to remove the rough roof of the temporary laboratory in which the work was done, and build a furnace about it. So the last stage of Cavorite making, in which the paste is heated to a dull red glow in a stream of helium, would be accomplished when it was already on the sphere.

And then we had to discuss and decide what provisions we were to take--compressed foods, concentrated essences, steel cylinders containing

reserve oxygen, an arrangement for removing carbonic acid and waste from the air and restoring oxygen by means of sodium peroxide, water condensers, and so forth. I remember the little heap they made in the corner--tins, and rolls, and boxes--convincingly matter-of-fact.

It was a strenuous time, with little chance of thinking. But one day, when we were drawing near the end, an odd mood came over me. I had been bricking up the furnace all the morning, and I sat down by these possessions dead beat. Everything seemed dull and incredible.

"But look here, Cavor," I said. "After all! What's it all for?"

He smiled. "The thing now is to go."

"The moon," I reflected. "But what do you expect? I thought the moon was a dead world."

He shrugged his shoulders.

"We're going to see."

"Are we?" I said, and stared before me.

"You are tired," he remarked. "You'd better take a walk this afternoon."

"No," I said obstinately; "I'm going to finish this brickwork."

And I did, and insured myself a night of insomnia. I don't think I have ever had such a night. I had some bad times before my business collapse, but the very worst of those was sweet slumber compared to this infinity of aching wakefulness. I was suddenly in the most enormous funk at the thing we were going to do.

I do not remember before that night thinking at all of the risks we were running. Now they came like that array of spectres that once beleaguered Prague, and camped around me. The strangeness of what we were about to do, the unearthliness of it, overwhelmed me. I was like a man awakened out of pleasant dreams to the most horrible surroundings. I lay, eyes wide open, and the sphere seemed to get more flimsy and feeble, and Cavor more unreal and fantastic, and the whole enterprise madder and madder every moment.

I got out of bed and wandered about. I sat at the window and stared at the immensity of space. Between the stars was the void, the unfathomable darkness! I tried to recall the fragmentary knowledge of astronomy I had gained in my irregular reading, but it was all too vague to furnish any idea of the things we might expect. At last I got back to bed and snatched some moments of sleep--moments of nightmare rather--in which I fell and fell and fell for evermore into the abyss of the sky.

I astonished Cavor at breakfast. I told him shortly, "I'm not coming with you in the sphere."

I met all his protests with a sullen persistence. "The thing's too mad," I said, "and I won't come. The thing's too mad."

I would not go with him to the laboratory. I fretted about my bungalow for a time, and then took hat and stick and set out alone, I knew not whither. It chanced to be a glorious morning: a warm wind and deep blue sky, the first green of spring abroad, and multitudes of birds singing. I lunched on beef and beer in a little public-house near Elham, and startled the landlord by remarking apropos of the weather, "A man who leaves the world when days of this sort are about is a fool!"

"That's what I say when I heard on it!" said the landlord, and I found that for one poor soul at least this world had proved excessive, and there had been a throat-cutting. I went on with a new twist to my thoughts.

In the afternoon I had a pleasant sleep in a sunny place, and went on my way refreshed. I came to a comfortable-looking inn near Canterbury. It was bright with creepers, and the landlady was a clean old woman and took my eye. I found I had just enough money to pay for my lodging with her. I decided to stop the night there. She was a talkative body, and among many other particulars learnt she had never been to London. "Canterbury's as far as ever I been," she said. "I'm not one of your gad-about sort."

"How would you like a trip to the moon?" I cried.

"I never did hold with them ballooneys," she said evidently under the

impression that this was a common excursion enough. "I wouldn't go up in one--not for ever so."

This struck me as being funny. After I had supped I sat on a bench by the door of the inn and gossiped with two labourers about brickmaking, and motor cars, and the cricket of last year. And in the sky a faint new crescent, blue and vague as a distant Alp, sank westward over the sun.

The next day I returned to Cavor. "I am coming," I said. "I've been a little out of order, that's all."

That was the only time I felt any serious doubt our enterprise. Nerves purely! After that I worked a little more carefully, and took a trudge for an hour every day. And at last, save for the heating in the furnace, our labours were at an end.