

# The Cosmic Dust

By Christopher Blayre

Many years ago Mr. Kipling related a remarkable incident in the lives of certain journalists who had what is known in the newspaper world as a ‘scoop.’ They were present at the capture of a sea serpent. And, having written an account of the capture—each according to his lights and personal idiosyncrasies—they agreed that the ‘story’ was too overwhelming for publication, and, by common consent, suppressed their narrations and wrote nothing at all. I have found myself in the same position, but I am impelled, after a considerable lapse of time, to set down the following account of the matter. It may be that the time will arrive when what I have to say may be rescued from the scattered archives of dead records and brought to life as an anticipation—like Roger Bacon’s and Leonardo da Vinci’s adumbration and invention of the aeroplane.

There are those still living and at work who will remember the account given by the Professor of Psychology—not the present occupant of the chair, but his predecessor, Chalmers—of the death of Alured Markwand, and of his commerce with Aalila, which account may see the light contemporaneously with that upon which I am now embarking. It will be remembered that he recorded, without laying any particular stress upon the matter, that on the spot where he caught his momentary glimpse of Aalila there was a circle of scintillating dust, a small quantity of which he collected and preserved in a tube which he carried away in his pocket.

The scientific instinct which led him to preserve this specimen was the cause of his death—a horrible death. A short time after the incidents which he related, much in the spirit of the present record, he found himself to be suffering from a painful blister on the right breast. As it refused to yield to ordinary treatment, and, enlarging, became deeper and more malignant, in point of fact a rodent ulcer, he confided the trouble to his friend the Regius Professor of Medicine.

The Regius Professor took a very grave view of the matter.

“Are you sure,” said he, “that you have not been exposed to the direct action of radium?”

“Not that I am aware of,” replied the patient. “Why?”

“Because if I know anything about it, this took its origin in a radium burn.”

My late colleague knew enough to realise the gravity of this pronouncement.

“Then this flaky, corn-like, granulation of the sore and of the skin round it, you think may be—” and he hesitated.

“Yes—I am afraid so,” replied the Professor of Medicine.

The early history of the discovery of radium is punctuated with the names of its victims, martyrs to science, who, in the dawn of knowledge of this terrible element, and before the methods of protection and their vital necessity were understood, paid with their lives for the knowledge which they gave to the scientific world. Visitors to the gruesome galleries of the Museum of the Royal College of Surgeons in London have been appalled by the exhibits illustrating the progress and results of that unconquerable scourge Exfoliative Dermatitis—the gradual and irresistible flaking away of the tissues, which precedes a lingering and irresistible death.

The Professor of Psychology was a brave man, but the verdict of the Regius Professor was one to make the bravest man on earth quail. It was sentence of death.

It was not till some weeks afterwards, when the disease had reached its maximum force, that my colleague suddenly remembered the tube of scintillating dust which he had tucked into his

upper right-hand waistcoat pocket, and had carried there until his return to town, when he transferred it with other relics of Markwand to the case containing his private journal and papers. It was then that I came into the story, for he sent the tube to me with a request that I should give him my views on the contents.

It was only recently that I had been appointed Professor of Chemistry in the University of Cosmopoli, and to tell the truth I had not yet quite settled into the position and got “my bearings,” either among my colleagues, or with the students, and I confess to a feeling of satisfaction which I experienced when this ordinary ‘collector’s tube’ was brought to me by the Regius Professor of Medicine, with my dying colleague’s message, to which he added his own earnest instance. He brought it to me wrapped in a piece of lead foil out of a tea-chest, late in the short afternoon of a dull December day. After his short explanation of the circumstances—he made no allusion to the death of Professor Markwand—we took the tube into the dark room of the laboratory, and there unwrapped it. The display of scintillations was staggering. Imagine a Super-Spintaroscope! I hastily wrapped up the tube again, and placed it in the ‘safe’ where our microscopic store of bromide of radium was kept, and we returned to my study.

“How long,” said I, “has this deadly thing been in existence—and where has it been kept?”

“Chalmers has had it for months, in a writing case, which he has kept in an iron safe in his cellar. But for two days he carried it about, naked, in his waistcoat pocket.”

“Good God!—and Chalmers?”

“He is doomed—rodent ulcer, and exfoliative dermatitis.”

\* \* \*

And thus it came about that the Chemical Laboratory of the University of Cosmopoli possesses the largest and purest specimen of the element radium in the world.

Whether the dust, which consisted of quite fifty per cent. of pure radium, was shed upon the floor of Markwand’s observatory in a scintillating circle from the draperies of Aalila, or whether it arrived independently of her during many weeks, by radiation pressure, remains an open question. We shall return to this later on. Let me attempt, at least, to marshal the facts as they unfolded themselves in the months that followed—though, like the journalists to whom I referred at the commencement of this record, I can never—nor can the colleagues who took part in their unfolding—publish them. All I can do is to transcribe them from my laboratory note-books, and leave them for the information of later research-workers.

\* \* \*

After we had, with infinite care and taking every possible—every known— and some new, precautions against radium burns, separated out the pure elements, we had left remaining about three cubic centimetres of a pale grey dust. I divided this into four parts, one of which I confided to the Professor of Botany, one to the Professor of Zoology, one I retained for myself, and the fourth remains as it reached me, in the cabinet of the Chemical Laboratory. My successors, if they think fit, may repeat our observations.

It resisted all known methods of chemical analysis; all that I could show was that it was largely organic—that is to say, I proved by negative methods that it contained no inorganic element, excepting perhaps a trace of iron, and of the mineral olivine. The work of my colleagues, however, was rewarded by results that, even now, I feel a considerable hesitancy in setting down.

The Professors of Botany and of Zoology conducted their researches together and concurrently—the methods they employed are familiar in the textbooks, and to these were added some blind and empiric processes of which, no doubt, they have preserved records. It is only the results with which I am at this moment concerned. It was after the lapse of some six months that I was sent for to the Botanical Laboratory, where I found my two colleagues in a state as nearly approaching excitement as is permitted to a University Professor. The dust had yielded no results under ordinary conditions of atmosphere and temperature, and the final cultivation had been made in slightly saline water at a temperature of 100° centigrade—in fact boiling point. They laid great stress upon this.

“May one ask why?” I said.

They looked at one another, and then one of them—I forget which—laughed nervously, and said:

“That would appear to be the temperature on this planet, within a very few years of the consolidation of its crust—the *consistentior status*.

I was startled. The reply seemed to open up illimitable fields of conjecture. I stammered:

“But—the Cambrian Period—azoic rocks?”

“Why azoic?” replied the Professor of Zoology. “But you are thinking of the Archaean series—Pre-Cambrian. With the earliest sedimentary rocks we get life without question—perhaps before.”

“My good man,” said the Professor of Botany, watching for my recovery, “we are going to show you some things so entirely inexplicable, that the mind flies at once to the only possible explanation—which is an impossible one.”

“That is rather confusing,” I suggested.

“Yes—confusion worse confounded, beyond the dreams of Milton. In this pressure chamber you see the culture of your dust, actively proceeding. Here are some mounted microscope slides—in balsam you have Protozoa, Algae, Mosses, Bacteria—in dry cells you have microscopic shells, baby Lamellibranchs.”

“And they came?” I was almost afraid to ask.

“From the material you submitted to us.”

“Then you think?”

“We don’t think. We dare not think. Here is a tiny thing—we dare not give it a name—but we know it.”

They showed me their preparations. To the Botanist I said:

“What are they?”

He replied: “These things do not inhabit the earth to-day—excepting in that boiling tank.”

To the Zoologist I said:

“What are they?”

He replied: “These things do not inhabit the earth to-day—unless represented by one little bivalve shell—excepting in that boiling tank.”

My brain reeled. “What are you going to do next?”

The Professor of Zoology replied:

“We are going to call in the Professor of Geology and Palaeontology.”

We made an appointment with him for the following day.

\* \* \*

My esteemed colleague the Professor of Geology was one of the most remarkable men of his time—or of any other. He presented, to the astonished student of human nature, the almost unheard-of combination of a distinguished man of science and a prig. In the earlier days of his career it had been confidently asserted by Cosmogonists—on the metaphysical side—that in the beginning the Almighty created the Professor of Geology, and that having rested awhile after this stupendous effort, He set about the creation of a World which might, in some respects at least, be a place worthy to be the habitation of the Professor of Geology. The latter, it may be said at once, was far from convinced that the second effort of the Almighty had been altogether a success. He inspired a wholesome fear and respect not unmingled with dislike.

He duly attended the conference in the Botanical Laboratory, explaining that the utmost limit of time he could spare was twenty minutes. He remained two hours, at the end of which he was visibly annoyed. For the first time in his professional life he was unable to annihilate his colleagues with a few disagreeably-worded ex-cathedral sentences of doom.

“I may assume,” said he, “that you are not seeking to make me the victim of some futile practical joke, but if you are, I am free to confess that the means you have adopted to that end are utterly beyond me. You tell me that these organisms have been cultivated—bred—from a few cubic centimetres of dust, found on the floor of Markwand’s observatory, after freeing it from a notable proportion of the element radium.”

“That is so,” replied Cantrell, the Zoologist.

“That is so,” replied Warham, the Botanist.

“Well, all I can say is that I—I, Peterson—tell you that we are looking at immature living specimens of Upper and Lower Cambrian flora. This Lamellibranch is *Lingulella*, indistinguishable from the specimens found in the *Lingula* flags of Dolgelly, but this is fully represented by a living species. Similarly these microorganisms are the same Foraminifera as have been identified by Chapman in the Upper Cambrian beds of Malvern, *Lagena*, *Nodosaria*, *Cristellaria*, *Spirillina*, but these genera are represented almost unaltered in modern seas. If it went no farther I should be inclined to revert to the practical joke theory, *but*,” and he paused for a moment before he went on, “here are juvenile Trilobites, *Paradoxides*, *Agnostus Sao*; here, burrowing in the mud is the worm *Histioderma*; here is the Alga *Oldhamia* of Edward Forbes. In any other circumstances I should say that my brain was affected, but if I know anything at all of Cambrian Palaeontology, this minute thing swimming about in practically boiling water is the Phyllopod crustacean—the Shrimp *Hymenocaris*.”

He stopped abruptly, and in the dead silence which followed we all looked at one another, and from one another to the tanks, and the slides which lay strewn around the microscope.

Cantrell was the first to speak.

“Then you think,” said he, “that the material under examination is—.”

“I don’t think,” replied Peterson, explosively, “I can’t think—I dare not think—but if I allow myself to think anything, I think the material is Cosmic Dust.”

Cosmic Dust! Moved by one impulse we all leapt to our feet and crowded once more together at the laboratory bench—but none of us said a word. All our minds, I undertake to swear, reverted on the spot to a memorable meeting of the Geological Society, at which Professor Peterson had risen to his greatest height, pulverising the Planetesimal Theory of Svante Arrhenius. The whole frantic and interminable controversy between the mechanists and the vitalists, almost the dead issue between the catastrophists and the uniformitarians, sprang into our thoughts. That Peterson—Peterson of all men in the world—should admit the introduction into a scientific discussion (though he had done practically all the talking—as usual) of the mere

phrase 'Cosmic Dust!' It was as if Cantrell had suddenly taken up his parable in defence of the discredited Bathybius!

"We will not carry the matter further now," said Peterson, in his best lecture-theatre manner. "I will look in from time to time and watch the development of these observations. You will all of you please meet in my room, after four, this day week."

And with that he left us—leaving the door open.

\* \* \*

True to his word Peterson haunted the Botanical Laboratory all that week, and obedient to his summons, we met in his room on the appointed day. We sat round like good little first-year students whilst he lectured us.

"I will not go back to the theory of Nordenskiöld that by the fall of meteorites and cosmic dust the weight of the earth is annually increased by at least ten million tons. I shall advance no new theory of my own. I have here Svante Arrhenius' book *Worlds in the Making*—I will merely refer to some passages which I marked for criticism on an occasion which you doubtless all remember."

We shared between us the flicker of a faint smile—which seemed to accentuate the portentous gravity of Peterson.

"I have heard incomplete accounts of the phenomena alleged to have taken place prior to the death of Markwand. I have supposed, pardonably, that Chalmers was temporarily insane. I have reconsidered that opinion. The presence—the person, if you will—which he has recorded, apparently arrived upon this planet from Venus by radiation pressure. The mean temperature of Venus has been calculated at 40° centigrade, a temperature clearly favourable to organic life—the same may be said of Mars. But the time required for particles to reach here from Venus—forty days as calculated by Arrhenius—is clearly open to revision. Upon the theory of the organic nature of these particles much has been written—the theory of pan-spermia suggested by de Montlivaut, by Richter, by Flammarion—others. I have come to look with respect upon Kelvin's remarkable views on this subject expressed in his presidential address before the British Association in 1871. I will read you Arrhenius's statement of the theory, which is as follows: 'It is probable that there are organisms so small that the radiation pressure of a sun would push them out into space, where they might give rise to life on planets, provided they met with favourable conditions for their development.' I recall your minds to the culture processes you have severally adopted."

He continued to read extracts from the work of Arrhenius.

"Who shall say that such germs are not continually being carried away from this earth? Most of these spores thus carried away, will no doubt meet death in the cold infinite space of the Universe, about -220° C. Yet a small number of spores will fall upon some other world and may thus be able to spread life if the conditions are suitable. You will remember that at the Jenner Institute, in London, micro-organisms have lived for twenty-four hours in liquid hydrogen at a temperature of -252° C. It may take one million, or several millions of years from the age at which a planet could possibly begin to sustain life to the time when the first seed falls upon it and germinates, and when organic life is thus originated. This period is of little significance in comparison with the time during which life will afterwards flourish on the planet.

"It may be objected that the powerful light from the sun during transit would kill these germs—the experiments of Roux have shown us that spores that are readily killed by light when

the air has access, remain alive when the air is excluded—no one can assert with certainty that spores would be killed by the light rays in wandering through infinite space. The germs are propelled by the radiation pressure, attached to grains of dust which serve both as carriers and protectors.

“Why have the experiments you have made not been made before? Arrhenius terminates his book with the answer: ‘The number of germs which reach us from other worlds will be extremely limited—not more perhaps than a few within a year all over the earth’s surface.’ The dust precipitated in Markwand’s observatory was a concentrated precipitation. Nothing like it has ever been suggested—much less demonstrated—before. Therefore, gentlemen, I am of the opinion—and I express it with a full sense of the responsibility which I incur in expressing it—that the material under consideration is Cosmic Dust—similar to that which was falling in Cambrian times—a thousand million years ago, which germinated when the conditions became favourable, and produced the Cambrian Fauna and Flora—exactly as you have produced them in Warham’s laboratory.”

Peterson sat down, and dried his forehead with his handkerchief. I was the first to break the silence, and my voice was husky.

“What shall we do about it—publish?”

“No! A thousand times no,” cried Peterson. “What is the use? We should be laughed to scorn in every Scientific Society of the world. We should go down to posterity as hoaxed—or mad. There is only one thing to be done—we must destroy all traces of the cultures—and we must hold our tongues.”

And upon that we parted.