

**RUSKIN JOHN**

THE ETHICS OF  
THE DUST

John Ruskin

**The Ethics of the Dust**

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**John Ruskin**  
**The Ethics of the Dust**

**TEN LECTURES TO LITTLE HOUSEWIVES**

**ON THE ELEMENTS OF CRYSTALLIZATION**

**BY JOHN RUSKIN, LL.D.,**

**HONORARY STUDENT OF CHRIST CHURCH,  
AND SLADE PROFESSOR OF FINE ART**

## **DEDICATION**

**TO THE REAL LITTLE HOUSEWIVES, WHOSE GENTLE LISTENING AND  
THOUGHTFUL QUESTIONING ENABLED THE WRITER TO WRITE THIS BOOK, IT  
IS DEDICATED WITH HIS LOVE.**

**CHRISTMAS, 1875.**

## PERSONAE

OLD LECTURER (of incalculable age).	
FLORRIE, on astronomical evidence presumed to be aged 9.	
<b>ISABEL</b> .....	" 11.
<b>MAY</b> .....	" 11.
<b>LILY</b> .....	" 12.
<b>KATHLEEN</b> .....	" 14.
<b>LUCILLA</b> .....	" 15.
<b>VIOLET</b> .....	" 16.
DORA (who has the keys and is housekeeper)...	" 17.
EGYPT (so called from her dark eyes) .....	" 17.
JESSIE (who somehow always makes the room look brighter when she is in it) .....	" 18.
MARY (of whom everybody, including the Old Lecturer, is in great awe) .....	" 20.

## **PREFACE TO THE SECOND EDITION**

I have seldom been more disappointed by the result of my best pains given to any of my books, than by the earnest request of my publisher, after the opinion of the public had been taken on the "Ethics of the Dust," that I would "write no more in dialogue!" However, I bowed to public judgment in this matter at once (knowing also my inventive powers to be of the feeblest); but in reprinting the book (at the prevailing request of my kind friend, Mr. Henry Willett), I would pray the readers whom it may at first offend by its disconnected method, to examine, nevertheless, with care, the passages in which the principal speaker sums the conclusions of any dialogue: for these summaries were written as introductions, for young people, to all that I have said on the same matters in my larger books; and, on re-reading them, they satisfy me better, and seem to me calculated to be more generally useful, than anything else I have done of the kind.

## PREFACE TO THE SECOND EDITION

The summary of the contents of the whole book, beginning, "You may at least earnestly believe," at p. 215, is thus the clearest exposition I have ever yet given of the general conditions under which the Personal Creative Power manifests itself in the forms of matter; and the analysis of heathen conceptions of Deity, beginning at p. 217, and closing at p. 229, not only prefaces, but very nearly supersedes, all that in more lengthy terms I have since asserted, or pleaded for, in "Aratra Pentelici," and the "Queen of the Air."

And thus, however the book may fail in its intention of suggesting new occupations or interests to its younger readers, I think it worth reprinting, in the way I have also reprinted "Unto this Last,"—page for page; that the students of my more advanced works may be able to refer to these as the original documents of them; of which the most essential in this book are these following.

I. The explanation of the baseness of the avaricious functions of the Lower Pthah, p. 54, with his beetle-gospel, p. 59, "that a nation can stand on its vices better than on its virtues," explains the main motive of all my books on Political Economy.

II. The examination of the connection between stupidity and crime, pp. 87-96, anticipated all that I have had to urge in Fors Clavigera against the commonly alleged excuse for public wickedness,—"They don't mean it—they don't know any better."

III. The examination of the roots of Moral Power, pp. 145-149, is a summary of what is afterwards developed with utmost care in my inaugural lecture at Oxford on the relation of Art to Morals; compare in that lecture, sections 83-85, with the sentence in p. 147 of this book, "Nothing is ever done so as really to please our Father, unless we would also have done it, though we had had no Father to know of it."

This sentence, however, it must be observed, regards only the general conditions of action in the children of God, in consequence of which it is foretold of them by Christ that they will say at the Judgment, "When saw we thee?" It does not refer to the distinct cases in which virtue consists in faith given to command, appearing to foolish human judgment inconsistent with the Moral Law, as in the sacrifice of Isaac; nor to those in which any directly-given command requires nothing more of virtue than obedience.

IV. The subsequent pages, 149-158, were written especially to check the dangerous impulses natural to the minds of many amiable young women, in the direction of narrow and selfish religious sentiment: and they contain, therefore, nearly everything which I believe it necessary that young people should be made to observe, respecting the errors of monastic life. But they in nowise enter on the reverse, or favorable side: of which indeed I did not, and as yet do not, feel myself able to speak with any decisiveness; the evidence on that side, as stated in the text, having "never yet been dispassionately examined."

V. The dialogue with Lucilla, beginning at p. 96, is, to my own fancy, the best bit of conversation in the book; and the issue of it, at p. 103, the most practically and immediately useful. For on the idea of the inevitable weakness and corruption of human nature, has logically followed, in our daily life, the horrible creed of modern "Social science," that all social action must be scientifically founded on vicious impulses. But on the habit of measuring and reverencing our powers and talents that we may kindly use them, will be founded a true Social science, developing, by the employment of them, all the real powers and honorable feelings of the race.

VI. Finally, the account given in the second and third lectures, of the real nature and marvelousness of the laws of crystallization, is necessary to the understanding of what farther teaching of the beauty of inorganic form I may be able to give, either in "Deucalion," or in my "Elements of Drawing." I wish however that the second lecture had been made the beginning of the book; and would fain now cancel the first altogether, which I perceive to be both obscure and dull. It was meant

for a metaphorical description of the pleasures and dangers in the kingdom of Mammon, or of worldly wealth; its waters mixed with blood, its fruits entangled in thickets of trouble, and poisonous when gathered; and the final captivity of its inhabitants within frozen walls of cruelty and disdain. But the imagery is stupid and ineffective throughout; and I retain this chapter only because I am resolved to leave no room for any one to say that I have withdrawn, as erroneous in principle, so much as a single sentence of any of my books written since 1860.

One license taken in this book, however, though often permitted to essay-writers for the relief of their dullness, I never mean to take more,—the relation of composed metaphor as of actual dream, pp. 27 and 171. I assumed, it is true, that in these places the supposed dream would be easily seen to be an invention; but must not any more, even under so transparent disguise, pretend to any share in the real powers of Vision possessed by great poets and true painters.

**BRANTWOOD:**

10th October, 1877.

## PREFACE

The following lectures were really given, in substance, at a girls' school (far in the country); which, in the course of various experiments on the possibility of introducing some better practice of drawing into the modern scheme of female education, I visited frequently enough to enable the children to regard me as a friend. The Lectures always fell more or less into the form of fragmentary answers to questions; and they are allowed to retain that form, as, on the whole, likely to be more interesting than the symmetries of a continuous treatise. Many children (for the school was large) took part, at different times, in the conversations; but I have endeavored, without confusedly multiplying the number of imaginary speakers, to represent, as far as I could, the general tone of comment and inquiry among young people.

[Footnote: I do not mean, in saying "imaginary," that I have not permitted to myself, in several instances, the affectionate discourtesy of some reminiscence of personal character; for which I must hope to be forgiven by my old pupils and their friends, as I could not otherwise have written the book at all. But only two sentences in all the dialogues, and the anecdote of "Dotty," are literally "historical."]

It will be at once seen that these Lectures were not intended for an introduction to mineralogy. Their purpose was merely to awaken in the minds of young girls, who were ready to work earnestly and systematically, a vital interest in the subject of their study. No science can be learned in play; but it is often possible, in play, to bring good fruit out of past labor, or show sufficient reasons for the labor of the future.

The narrowness of this aim does not, indeed, justify the absence of all reference to many important principles of structure, and many of the most interesting orders of minerals; but I felt it impossible to go far into detail without illustrations; and if readers find this book useful, I may, perhaps, endeavor to supplement it by illustrated notes of the more interesting phenomena in separate groups of familiar minerals;—flints of the chalk;—agates of the basalts;—and the fantastic and exquisitely beautiful varieties of the vein-ores of the two commonest metals, lead and iron. But I have always found that the less we speak of our intentions, the more chance there is of our realizing them; and this poor little book will sufficiently have done its work, for the present, if it engages any of its young readers in study which may enable them to despise it for its shortcomings.

DENMARK HILL: Christmas, 1865.

## LECTURE 1. THE VALLEY OF DIAMONDS

A very idle talk, by the dining-room fire, after raisin-and-almond time.

OLD LECTURER; FLORRIE, ISABEL, MAY, LILY, and SIBYL.

OLD LECTURER (L.). Come here, Isabel, and tell me what the make-believe was, this afternoon.

ISABEL (arranging herself very primly on the foot-stool). Such a dreadful one! Florrie and I were lost in the Valley of Diamonds.

L. What! Sindbad's, which nobody could get out of? ISABEL. Yes; but Florrie and I got out of it.

L. So I see. At least, I see you did; but are you sure Florrie did?

ISABEL. Quite sure.

FLORRIE (putting her head round from behind L.'s sofa-cushion). Quite sure. (Disappears again.)

L. I think I could be made to feel surer about it.

(FLORRIE reappears, gives L. a kiss, and again exit.)

L. I suppose it's all right; but how did you manage it?

ISABEL. Well, you know, the eagle that took up Sindbad was very large—very, very large—the largest of all the eagles.

L. How large were the others?

ISABEL. I don't quite know—they were so far off. But this one was, oh, so big! and it had great wings, as wide as—twice over the ceiling. So, when it was picking up Sindbad, Florrie and I thought it wouldn't know if we got on its back too: so I got up first, and then I pulled up Florrie, and we put our arms round its neck, and away it flew.

L. But why did you want to get out of the valley? and why haven't you brought me some diamonds?

ISABEL. It was because of the serpents. I couldn't pick up even the least little bit of a diamond, I was so frightened.

L. You should not have minded the serpents.

ISABEL. Oh, but suppose that they had minded me?

L. We all of us mind you a little too much, Isabel, I'm afraid.

ISABEL. No—no—no, indeed.

L. I tell you what, Isabel—I don't believe either Sindbad, or Florrie, or you, ever were in the Valley of Diamonds.

ISABEL. You naughty! when I tell you we were!

L. Because you say you were frightened at the serpents.

ISABEL. And wouldn't you have been?

L. Not at those serpents. Nobody who really goes into the valley is ever frightened at them—they are so beautiful.

ISABEL (suddenly serious). But there's no real Valley of Diamonds, is there?

L. Yes, Isabel; very real indeed.

FLORRIE (reappearing). Oh, where? Tell me about it.

L. I cannot tell you a great deal about it; only I know it is very different from Sindbad's. In his valley, there was only a diamond lying here and there; but, in the real valley, there are diamonds covering the grass in showers every morning, instead of dew: and there are clusters of trees, which look like lilac trees; but, in spring, all their blossoms are of amethyst.

FLORRIE. But there can't be any serpents there, then?

L. Why not?

FLORRIE. Because they don't come into such beautiful places.

L. I never said it was a beautiful place.

FLORRIE. What! not with diamonds strewed about it like dew?

L. That's according to your fancy, Florrie. For myself, I like dew better.

ISABEL. Oh, but the dew won't stay; it all dries!

L. Yes; and it would be much nicer if the diamonds dried too, for the people in the valley have to sweep them off the grass, in heaps, whenever they want to walk on it; and then the heaps glitter so, they hurt one's eyes.

FLORRIE. Now you're just playing, you know.

L. So are you, you know.

FLORRIE. Yes, but you mustn't play.

L. That's very hard, Florrie; why mustn't I, if you may?

FLORRIE. Oh, I may, because I'm little, but you mustn't, because you're—(hesitates for a delicate expression of magnitude).

L. (rudely taking the first that comes). Because I'm big? No; that's not the way of it at all, Florrie. Because you're little, you should have very little play; and because I'm big I should have a great deal.

ISABEL and FLORRIE (both). No—no—no—no. That isn't it at all. (ISABEL sola, quoting Miss Ingelow.) "The lambs play always—they know no better." (Putting her head very much on one side.) Ah, now—please—please—tell us true; we want to know.

L. But why do you want me to tell you true, any more than the man who wrote the "Arabian Nights"?

ISABEL. Because—because we like to know about real things; and you can tell us, and we can't ask the man who wrote the stories.

L. What do you call real things?

ISABEL. Now, you know! Things that really are.

L. Whether you can see them or not?

ISABEL. Yes, if somebody else saw them.

L. But if nobody has ever seen them?

ISABEL. (evading the point). Well, but, you know, if there were a real Valley of Diamonds, somebody MUST have seen it.

L. You cannot be so sure of that, Isabel. Many people go to real places, and never see them; and many people pass through this valley, and never see it.

FLORRIE. What stupid people they must be!

L. No, Florrie. They are much wiser than the people who do see it.

MAY. I think I know where it is.

ISABEL. Tell us more about it, and then we'll guess.

L. Well. There's a great broad road, by a river-side, leading up into it.

MAY (gravely cunning, with emphasis on the last word). Does the road really go UP?

L. You think it should go down into a valley? No, it goes up; this is a valley among the hills, and it is as high as the clouds, and is often full of them; so that even the people who most want to see it, cannot, always.

ISABEL. And what is the river beside the road like?

L. It ought to be very beautiful, because it flows over diamond sand—only the water is thick and red.

ISABEL. Red water?

L. It isn't all water.

MAY. Oh, please never mind that, Isabel, just now; I want to hear about the valley.

L. So the entrance to it is very wide, under a steep rock; only such numbers of people are always trying to get in, that they keep jostling each other, and manage it but slowly. Some weak ones are pushed back, and never get in at all; and make great moaning as they go away: but perhaps they are none the worse in the end.

MAY. And when one gets in, what is it like?

L. It is up and down, broken kind of ground: the road stops directly; and there are great dark rocks, covered all over with wild gourds and wild vines; the gourds, if you cut them, are red, with black seeds, like water-melons, and look ever so nice; and the people of the place make a red pottage of them: but you must take care not to eat any if you ever want to leave the valley (though I believe putting plenty of meal in it makes it wholesome). Then the wild vines have clusters of the color of amber; and the people of the country say they are the grape of Eshcol; and sweeter than honey: but, indeed, if anybody else tastes them, they are like gall. Then there are thickets of bramble, so thorny that they would be cut away directly, anywhere else; but here they are covered with little cinque-foiled blossoms of pure silver; and, for berries, they have clusters of rubies. Dark rubies, which you only see are red after gathering them. But you may fancy what blackberry parties the children have! Only they get their frocks and hands sadly torn.

LILY. But rubies can't spot one's frocks, as blackberries do?

L. No; but I'll tell you what spots them—the mulberries. There are great forests of them, all up the hills, covered with silk-worms, some munching the leaves so loud that it is like mills at work; and some spinning. But the berries are the blackest you ever saw; and, wherever they fall, they stain a deep red; and nothing ever washes it out again. And it is their juice, soaking through the grass, which makes the river so red, because all its springs are in this wood. And the boughs of the trees are twisted, as if in pain, like old olive branches; and their leaves are dark. And it is in these forests that the serpents are; but nobody is afraid of them. They have fine crimson crests, and they are wreathed about the wild branches, one in every tree, nearly; and they are singing serpents, for the serpents are, in this forest, what birds are in ours.

FLORRIE. Oh, I don't want to go there at all, now.

L. You would like it very much indeed, Florrie, if you were there. The serpents would not bite you; the only fear would be of your turning into one!

FLORRIE. Oh, dear, but that's worse.

L. You wouldn't think so if you really were turned into one, Florrie; you would be very proud of your crest. And as long as you were yourself (not that you could get there if you remained quite the little Florrie you are now), you would like to hear the serpents sing. They hiss a little through it, like the cicadas in Italy; but they keep good time, and sing delightful melodies; and most of them have seven heads, with throats which each take a note of the octave; so that they can sing chords—it is very fine indeed. And the fireflies fly round the edge of the forests all the night long; you wade in fireflies, they make the fields look like a lake trembling with reflection of stars; but you must take care not to touch them, for they are not like Italian fireflies, but burn, like real sparks.

FLORRIE. I don't like it at all; I'll never go there.

L. I hope not, Florrie; or at least that you will get out again if you do. And it is very difficult to get out, for beyond these serpent forests there are great cliffs of dead gold, which form a labyrinth, winding always higher and higher, till the gold is all split asunder by wedges of ice; and glaciers, welded, half of ice seven times frozen, and half of gold seven times frozen, hang down from them, and fall in thunder, cleaving into deadly splinters, like the Cretan arrowheads; and into a mixed dust of snow and gold, ponderous, yet which the mountain whirlwinds are able to lift and drive in wreaths and pillars, hiding the paths with a burial cloud, fatal at once with wintry chill, and weight of golden ashes. So the wanderers in the labyrinth fall, one by one, and are buried there:—yet, over the drifted graves, those who are spared climb to the last, through coil on coil of the path;—for at the end of

it they see the king of the valley, sitting on his throne: and beside him (but it is only a false vision), spectra of creatures like themselves, sit on thrones, from which they seem to look down on all the kingdoms of the world, and the glory of them. And on the canopy of his throne there is an inscription in fiery letters, which they strive to read, but cannot; for it is written in words which are like the words of all languages, and yet are of none. Men say it is more like their own tongue to the English than it is to any other nation; but the only record of it is by an Italian, who heard the king himself cry it as a war cry, "Pape Satan, Pape Satan Aleppe." [Footnote: Dante, *Inf.* 7, I.]

SIBYL. But do they all perish there? You said there was a way through the valley, and out of it.

L. Yes; but few find it. If any of them keep to the grass paths, where the diamonds are swept aside; and hold their hands over their eyes so as not to be dazzled, the grass paths lead forward gradually to a place where one sees a little opening in the golden rocks. You were at Chamouni last year, Sibyl; did your guide chance to show you the pierced rock of the Aiguille du Midi?

SIBYL. No, indeed, we only got up from Geneva on Monday night; and it rained all Tuesday; and we had to be back at Geneva again, early on Wednesday morning.

L. Of course. That is the way to see a country in a Sibylline manner, by inner consciousness: but you might have seen the pierced rock in your drive up, or down, if the clouds broke: not that there is much to see in it; one of the crags of the aiguille-edge, on the southern slope of it, is struck sharply through, as by an awl, into a little eyelet hole; which you may see, seven thousand feet above the valley (as the clouds flit past behind it, or leave the sky), first white, and then dark blue. Well, there's just such an eyelet hole in one of the upper crags of the Diamond Valley; and, from a distance, you think that it is no bigger than the eye of a needle. But if you get up to it, they say you may drive a loaded camel through it, and that there are fine things on the other side, but I have never spoken with anybody who had been through.

SIBYL. I think we understand it now. We will try to write it down, and think of it.

L. Meantime, Florrie, though all that I have been telling you is very true, yet you must not think the sort of diamonds that people wear in rings and necklaces are found lying about on the grass. Would you like to see how they really are found?

FLORRIE. Oh, yes—yes.

L. Isabel—or Lily—run up to my room and fetch me the little box with a glass lid, out of the top drawer of the chest of drawers. (Race between LILY and ISABEL.)

(Re-enter ISABEL with the box, very much out of breath. LILY behind.)

L. Why, you never can beat Lily in a race on the stairs, can you, Isabel?

ISABEL (panting). Lily—beat me—ever so far—but she gave me—the box—to carry in.

L. Take off the lid, then; gently.

FLORRIE (after peeping in, disappointed). There's only a great ugly brown stone!

L. Not much more than that, certainly, Florrie, if people were wise. But look, it is not a single stone; but a knot of pebbles fastened together by gravel: and in the gravel, or compressed sand, if you look close, you will see grains of gold glittering everywhere, all through; and then, do you see these two white beads, which shine, as if they had been covered with grease?

FLORRIE. May I touch them?

L. Yes; you will find they are not greasy, only very smooth. Well, those are the fatal jewels; native here in their dust with gold, so that you may see, cradled here together, the two great enemies of mankind,—the strongest of all malignant physical powers that have tormented our race.

SIBYL. Is that really so? I know they do great harm; but do they not also do great good?

L. My dear child, what good? Was any woman, do you suppose, ever the better for possessing diamonds? but how many have been made base, frivolous, and miserable by desiring them? Was ever man the better for having coffer full of gold? But who shall measure the guilt that is incurred to fill them? Look into the history of any civilized nations; analyze, with reference to this one cause of crime and misery, the lives and thoughts of their nobles, priests, merchants, and men of luxurious

life. Every other temptation is at last concentrated into this: pride, and lust, and envy, and anger all give up their strength to avarice. The sin of the whole world is essentially the sin of Judas. Men do not disbelieve their Christ; but they sell Him.

SIBYL. But surely that is the fault of human nature? it is not caused by the accident, as it were, of there being a pretty metal, like gold, to be found by digging. If people could not find that, would they not find something else, and quarrel for it instead?

L. No. Wherever legislators have succeeded in excluding, for a time, jewels and precious metals from among national possessions, the national spirit has remained healthy. Covetousness is not natural to man—generosity is; but covetousness must be excited by a special cause, as a given disease by a given miasma; and the essential nature of a material for the excitement of covetousness is, that it shall be a beautiful thing which can be retained without a use. The moment we can use our possessions to any good purpose ourselves, the instinct of communicating that use to others rises side by side with our power. If you can read a book rightly, you will want others to hear it; if you can enjoy a picture rightly, you will want others to see it: learn how to manage a horse, a plough, or a ship, and you will desire to make your subordinates good horsemen, ploughmen, or sailors; you will never be able to see the fine instrument you are master of, abused; but, once fix your desire on anything useless, and all the purest pride and folly in your heart will mix with the desire, and make you at last wholly inhuman, a mere ugly lump of stomach and suckers, like a cuttle-fish.

SIBYL. But surely, these two beautiful things, gold and diamonds, must have been appointed to some good purpose?

L. Quite conceivably so, my dear: as also earthquakes and pestilences; but of such ultimate purposes we can have no sight. The practical, immediate office of the earthquake and pestilence is to slay us, like moths; and, as moths, we shall be wise to live out of their way. So, the practical, immediate office of gold and diamonds is the multiplied destruction of souls (in whatever sense you have been taught to understand that phrase); and the paralysis of wholesome human effort and thought on the face of God's earth: and a wise nation will live out of the way of them. The money which the English habitually spend in cutting diamonds would, in ten years, if it were applied to cutting rocks instead, leave no dangerous reef nor difficult harbor round the whole island coast. Great Britain would be a diamond worth cutting, indeed, a true piece of regalia. (Leaves this to their thoughts for a little while.) Then, also, we poor mineralogists might sometimes have the chance of seeing a fine crystal of diamond unhacked by the jeweler.

SIBYL. Would it be more beautiful uncut?

L. No; but of infinite interest. We might even come to know something about the making of diamonds.

SIBYL. I thought the chemists could make them already?

L. In very small black crystals, yes; but no one knows how they are formed where they are found; or if indeed they are formed there at all. These, in my hand, look as if they had been swept down with the gravel and gold; only we can trace the gravel and gold to their native rocks, but not the diamonds. Read the account given of the diamond in any good work on mineralogy;—you will find nothing but lists of localities of gravel, or conglomerate rock (which is only an old indurated gravel). Some say it was once a vegetable gum; but it may have been charred wood; but what one would like to know is, mainly, why charcoal should make itself into diamonds in India, and only into black lead in Borrowdale.

SIBYL. Are they wholly the same, then?

L. There is a little iron mixed with our black lead; but nothing to hinder its crystallization. Your pencils in fact are all pointed with formless diamond, though they would be H H H pencils to purpose, if it crystallized.

SIBYL. But what IS crystallization?

L. A pleasant question, when one's half asleep, and it has been tea-time these two hours. What thoughtless things girls are!

SYBIL. Yes, we are; but we want to know, for all that.

L. My dear, it would take a week to tell you.

SIBYL. Well, take it, and tell us.

L. But nobody knows anything about it.

SIBYL. Then tell us something that nobody knows.

L. Get along with you, and tell Dora to make tea.

(The house rises; but of course the LECTURER wanted to be forced to lecture again, and was.)

## LECTURE 2. THE PYRAMID BUILDERS

In the large Schoolroom, to which everybody has been summoned by ringing of the great bell.

L. So you have all actually come to hear about crystallization! I cannot conceive why unless the little ones think that the discussion may involve some reference to sugar-candy.

(Symptoms of high displeasure among the younger members of council. ISABEL frowns severely at L., and shakes her head violently.)

My dear children, if you knew it, you are yourselves, at this moment, as you sit in your ranks, nothing, in the eye of a mineralogist, but a lovely group of rosy sugar-candy, arranged by atomic forces. And even admitting you to be something more, you have certainly been crystallizing without knowing it. Did not I hear a great hurrying and whispering ten minutes ago, when you were late in from the playground; and thought you would not all be quietly seated by the time I was ready:—besides some discussion about places—something about "it's not being fair that the little ones should always be nearest?" Well, you were then all being crystallized. When you ran in from the garden, and against one another in the passages, you were in what mineralogists would call a state of solution, and gradual confluence; when you got seated in those orderly rows, each in her proper place, you became crystalline. That is just what the atoms of a mineral do, if they can, whenever they get disordered: they get into order again as soon as may be.

I hope you feel inclined to interrupt me, and say, "But we know our places; how do the atoms know theirs? And sometimes we dispute about our places; do the atoms—(and, besides, we don't like being compared to atoms at all)—never dispute about theirs?" Two wise questions these, if you had a mind to put them! it was long before I asked them myself, of myself. And I will not call you atoms any more. May I call you—let me see—"primary molecules?" (General dissent indicated in subdued but decisive murmurs.) No! not even, in familiar Saxon, "dust"?

(Pause, with expression on faces of sorrowful doubt; LILY gives voice to the general sentiment in a timid "Please don't.")

No, children, I won't call you that; and mind, as you grow up, that you do not get into an idle and wicked habit of calling yourselves that. You are something better than dust, and have other duties to do than ever dust can do; and the bonds of affection you will enter into are better than merely "getting in to order." But see to it, on the other hand, that you always behave at least as well as "dust;" remember, it is only on compulsion, and while it has no free permission to do as it likes, that IT ever gets out of order; but sometimes, with some of us, the compulsion has to be the other way—hasn't it? (Remonstratory whispers, expressive of opinion that the LECTURER is becoming too personal.) I'm not looking at anybody in particular—indeed I am not. Nay, if you blush so, Kathleen, how can one help looking? We'll go back to the atoms.

"How do they know their places?" you asked, or should have asked. Yes, and they have to do much more than know them: they have to find their way to them, and that quietly and at once, without running against each other.

We may, indeed, state it briefly thus:—Suppose you have to build a castle, with towers and roofs and buttresses, out of bricks of a given shape, and that these bricks are all lying in a huge heap at the bottom, in utter confusion, upset out of carts at random. You would have to draw a great many plans, and count all your bricks, and be sure you had enough for this and that tower, before you began, and then you would have to lay your foundation, and add layer by layer, in order, slowly.

But how would you be astonished, in these melancholy days, when children don't read children's books, nor believe any more in fairies, if suddenly a real benevolent fairy, in a bright brick-red gown, were to rise in the midst of the red bricks, and to tap the heap of them with her wand, and say,

"Bricks, bricks, to your places!" and then you saw in an instant the whole heap rise in the air, like a swarm of red bees, and—you have been used to see bees make a honeycomb, and to think that strange enough, but now you would see the honeycomb make itself!—You want to ask something, Florrie, by the look of your eyes.

FLORRIE. Are they turned into real bees, with stings?

L. No, Florrie; you are only to fancy flying bricks, as you saw the slates flying from the roof the other day in the storm; only those slates didn't seem to know where they were going, and, besides, were going where they had no business: but my spell-bound bricks, though they have no wings, and what is worse, no heads and no eyes, yet find their way in the air just where they should settle, into towers and roofs, each flying to his place and fastening there at the right moment, so that every other one shall fit to him in his turn.

LILY. But who are the fairies, then, who build the crystals?

L. There is one great fairy, Lily, who builds much more than crystals; but she builds these also. I dreamed that I saw her building a pyramid, the other day, as she used to do, for the Pharaohs.

ISABEL. But that was only a dream?

L. Some dreams are truer than some wakings, Isabel; but I won't tell it you unless you like.

ISABEL. Oh, please, please.

L. You are all such wise children, there's no talking to you; you won't believe anything.

LILY. No, we are not wise, and we will believe anything, when you say we ought.

L. Well, it came about this way. Sibyl, do you recollect that evening when we had been looking at your old cave by Cumae, and wondering why you didn't live there still: and then we wondered how old you were; and Egypt said you wouldn't tell, and nobody else could tell but she; and you laughed—I thought very gayly for a Sibyl—and said you would harness a flock of cranes for us, and we might fly over to Egypt if we liked, and see.

SIBYL. Yes, and you went, and couldn't find out after all!

L. Why, you know, Egypt had been just doubling that third pyramid of hers; [Footnote: Note i.] and making a new entrance into it; and a fine entrance it was! First, we had to go through an ante-room, which had both its doors blocked up with stones; and then we had three granite portcullises to pull up, one after another; and the moment we had got under them, Egypt signed to somebody above; and down they came again behind us, with a roar like thunder, only louder; then we got into a passage fit for nobody but rats, and Egypt wouldn't go any further herself, but said we might go on if we liked; and so we came to a hole in the pavement, and then to a granite trap-door—and then we thought we had gone quite far enough, and came back, and Egypt laughed at us.

EGYPT. You would not have had me take my crown off, and stoop all the way down a passage fit only for rats?

L. It was not the crown, Egypt—you know that very well. It was the flounces that would not let you go any further. I suppose, however, you wear them as typical of the inundation of the Nile, so it is all right.

ISABEL. Why didn't you take me with you? Where rats can go, mice can. I wouldn't have come back.

L. No, mousie; you would have gone on by yourself, and you might have waked one of Pasht's cats,[Footnote: Note iii] and it would have eaten you. I was very glad you were not there. But after all this, I suppose the imagination of the heavy granite blocks and the underground ways had troubled me, and dreams are often shaped in a strange opposition to the impressions that have caused them; and from all that we had been reading in Bunsen about stones that couldn't be lifted with levers, I began to dream about stones that lifted themselves with wings.

SIBYL. Now you must just tell us all about it.

L. I dreamed that I was standing beside the lake, out of whose clay the bricks were made for the great pyramid of Asychis. [Footnote: Note ii] They had just been all finished, and were lying by

the lake margin, in long ridges, like waves. It was near evening; and as I looked towards the sunset, I saw a thing like a dark pillar standing where the rock of the desert stoops to the Nile valley. I did not know there was a pillar there, and wondered at it; and it grew larger, and glided nearer, becoming like the form of a man, but vast, and it did not move its feet, but glided, like a pillar of sand. And as it drew nearer, I looked by chance past it, towards the sun; and saw a silver cloud, which was of all the clouds closest to the sun (and in one place crossed it), draw itself back from the sun, suddenly. And it turned, and shot towards the dark pillar; leaping in an arch, like an arrow out of a bow. And I thought it was lightning; but when it came near the shadowy pillar, it sank slowly down beside it, and changed into the shape of a woman, very beautiful, and with a strength of deep calm in her blue eyes. She was robed to the feet with a white robe; and above that, to her knees, by the cloud which I had seen across the sun; but all the golden ripples of it had become plumes, so that it had changed into two bright wings like those of a vulture, which wrapped round her to her knees. She had a weaver's shuttle hanging over her shoulder, by the thread of it, and in her left hand, arrows, tipped with fire.

ISABEL (clapping her hands). Oh! it was Neith, it was Neith! I know now.

L. Yes; it was Neith herself; and as the two great spirits came nearer to me, I saw they were the Brother and Sister—the pillared shadow was the Greater Pthah.[Footnote: Note iii] And I heard them speak, and the sound of their words was like a distant singing. I could not understand the words one by one; yet their sense came to me; and so I knew that Neith had come down to see her brother's work, and the work that he had put into the mind of the king to make his servants do. And she was displeased at it; because she saw only pieces of dark clay; and no porphyry, nor marble, nor any fair stone that men might engrave the figures of the gods upon. And she blamed her brother, and said, "Oh, Lord of truth! is this then thy will, that men should mold only foursquare pieces of clay: and the forms of the gods no more?" Then the Lord of truth sighed, and said, "Oh! sister, in truth they do not love us; why should they set up our images? Let them do what they may, and not lie—let them make their clay foursquare; and labor; and perish."

Then Neith's dark blue eyes grew darker, and she said, "Oh, Lord of truth! why should they love us? their love is vain; or fear us? for their fear is base. Yet let them testify of us, that they knew we lived forever."

But the Lord of truth answered, "They know, and yet they know not.

Let them keep silence; for their silence only is truth."

But Neith answered, "Brother, wilt thou also make league with Death, because Death is true? Oh! thou potter, who hast cast these human things from thy wheel, many to dishonor, and few to honor; wilt thou not let them so much as see my face; but slay them in slavery?"

But Pthah only answered, "Let them build, sister, let them build."

And Neith answered, "What shall they build, if I build not with them?"

And Pthah drew with his measuring rod upon the sand. And I saw suddenly, drawn on the sand, the outlines of great cities, and of vaults, and domes, and aqueducts, and bastions, and towers, greater than obelisks, covered with black clouds. And the wind blew ripples of sand amidst the lines that Pthah drew, and the moving sand was like the marching of men. But I saw that wherever Neith looked at the lines, they faded, and were effaced.

"Oh, Brother!" she said at last, "what is this vanity? If I, who am Lady of wisdom, do not mock the children of men, why shouldst thou mock them, who art Lord of truth?" But Pthah answered, "They thought to bind me; and they shall be bound. They shall labor in the fire for vanity."

And Neith said, looking at the sand, "Brother, there is no true labor here—there is only weary life and wasteful death."

And Pthah answered, "Is it not truer labor, sister, than thy sculpture of dreams?" Then Neith smiled; and stopped suddenly.

She looked to the sun; its edge touched the horizon-edge of the desert. Then she looked to the long heaps of pieces of clay, that lay, each with its blue shadow, by the lake shore.

"Brother," she said, "how long will this pyramid of thine be in building?"

"Thoth will have sealed the scroll of the years ten times, before the summit is laid."

"Brother, thou knowest not how to teach thy children to labor," answered Neith. "Look! I must follow Phre beyond Atlas; shall I build your pyramid for you before he goes down?" And Pthah answered, "Yea, sister, if thou canst put thy winged shoulders to such work." And Neith drew herself to her height; and I heard a clashing pass through the plumes of her wings, and the asp stood up on her helmet, and fire gathered in her eyes. And she took one of the flaming arrows out of the sheaf in her left hand, and stretched it out over the heaps of clay. And they rose up like flights of locusts, and spread themselves in the air, so that it grew dark in a moment. Then Neith designed them places with her arrow point; and they drew into ranks, like dark clouds laid level at morning. Then Neith pointed with her arrow to the north, and to the south, and to the east, and to the west, and the flying motes of earth drew asunder into four great ranked crowds; and stood, one in the north, and one in the south, and one in the east, and one in the west—one against another. Then Neith spread her wings wide for an instant, and closed them with a sound like the sound of a rushing sea; and waved her hand towards the foundation of the pyramid, where it was laid on the brow of the desert. And the four flocks drew together and sank down, like sea-birds settling to a level rock, and when they met, there was a sudden flame, as broad as the pyramid, and as high as the clouds; and it dazzled me; and I closed my eyes for an instant; and when I looked again, the pyramid stood on its rock, perfect; and purple with the light from the edge of the sinking sun.

THE YOUNGER CHILDREN (variously pleased). I'm so glad! How nice! But what did Pthah say?

L. Neith did not wait to hear what he would say. When I turned back to look at her, she was gone; and I only saw the level white cloud form itself again, close to the arch of the sun as it sank. And as the last edge of the sun disappeared, the form of Pthah faded into a mighty shadow, and so passed away.

EGYPT. And was Neith's pyramid left?

L. Yes; but you could not think, Egypt, what a strange feeling of utter loneliness came over me when the presence of the two gods passed away. It seemed as if I had never known what it was to be alone before; and the unbroken line of the desert was terrible.

EGYPT. I used to feel that, when I was queen: sometimes I had to carve gods, for company, all over my palace. I would fain have seen real ones, if I could.

L. But listen a moment yet, for that was not quite all my dream. The twilight drew swiftly to the dark, and I could hardly see the great pyramid; when there came a heavy murmuring sound in the air; and a horned beetle, with terrible claws, fell on the sand at my feet, with a blow like the beat of a hammer. Then it stood up on its hind claws, and waved its pincers at me: and its fore claws became strong arms, and hands; one grasping real iron pincers, and the other a huge hammer; and it had a helmet on its head, without any eyelet holes, that I could see. And its two hind claws became strong crooked legs, with feet bent inwards. And so there stood by me a dwarf, in glossy black armor, ribbed and embossed like a beetle's back, leaning on his hammer. And I could not speak for wonder; but he spoke with a murmur like the dying away of a beat upon a bell. He said, "I will make Neith's great pyramid small. I am the lower Pthah; and have power over fire. I can wither the strong things, and strengthen the weak; and everything that is great I can make small, and everything that is little I can make great." Then he turned to the angle of the pyramid and limped towards it. And the pyramid grew deep purple; and then red like blood, and then pale rose-color, like fire. And I saw that it glowed with fire from within. And the lower Pthah touched it with the hand that held the pincers; and it sank down like the sand in an hour-glass,—then drew itself together, and sank, still, and became nothing, it seemed to me; but the armed dwarf stooped down, and took it into his hand, and brought it to me, saying, "Everything that is great I can make like this pyramid; and give into men's hands to destroy." And I saw that he had a little pyramid in his hand, with as many courses in it as the large one; and

built like that,—only so small. And because it glowed still, I was afraid to touch it; but Pthah said, "Touch it—for I have bound the fire within it, so that it cannot burn." So I touched it, and took it into my own hand; and it was cold; only red, like a ruby. And Pthah laughed, and became like a beetle again, and buried himself in the sand, fiercely; throwing it back over his shoulders. And it seemed to me as if he would draw me down with him into the sand; and I started back, and woke, holding the little pyramid so fast in my hand that it hurt me.

EGYPT. Holding WHAT in your hand?

L. The little pyramid.

EGYPT. Neith's pyramid?

L. Neith's, I believe; though not built for Asychis. I know only that it is a little rosy transparent pyramid, built of more courses of bricks than I can count, it being made so small. You don't believe me, of course, Egyptian infidel; but there it is. (Giving crystal of rose Fluor.)

(Confused examination by crowded audience, over each other's shoulders and under each other's arms. Disappointment begins to manifest itself.)

SIBYL. (not quite knowing why she and others are disappointed). But you showed us this the other day!

L. Yes; but you would not look at it the other day.

SIBYL. But was all that fine dream only about this?

L. What finer thing could a dream be about than this? It is small, if you will; but when you begin to think of things rightly, the ideas of smallness and largeness pass away. The making of this pyramid was in reality just as wonderful as the dream I have been telling you, and just as incomprehensible. It was not, I suppose, as swift, but quite as grand things are done as swiftly. When Neith makes crystals of snow, it needs a great deal more marshaling of the atoms, by her flaming arrows, than it does to make crystals like this one; and that is done in a moment.

EGYPT. But how you DO puzzle us! Why do you say Neith does it? You don't mean that she is a real spirit, do you?

L. What *I* mean, is of little consequence. What the Egyptians meant, who called her "Neith,"—or Homer, who called her "Athena,"—or Solomon, who called her by a word which the Greeks render as "Sophia," you must judge for yourselves. But her testimony is always the same, and all nations have received it: "I was by Him as one brought up with Him, and I was daily His delight; rejoicing in the habitable parts of the earth, and my delights were with the sons of men."

MARY. But is not that only a personification?

L. If it be, what will you gain by unpersonifying it, or what right have you to do so? Cannot you accept the image given you, in its life; and listen, like children, to the words which chiefly belong to you as children: "I love them that love me, and those that seek me early shall find me"?

(They are all quiet for a minute or two; questions begin to appear in their eyes.)

I cannot talk to you any more to-day. Take that rose-crystal away with you, and think.

## LECTURE 3. THE CRYSTAL LIFE

A very dull Lecture, willfully brought upon themselves by the elder children. Some of the young ones have, however, managed to get in by mistake. SCENE, the Schoolroom.

L. So I am to stand up here merely to be asked questions, to-day, Miss Mary, am I?

MARY. Yes; and you must answer them plainly; without telling us any more stories. You are quite spoiling the children: the poor little things' heads are turning round like kaleidoscopes: and they don't know in the least what you mean. Nor do we old ones, either, for that matter: to-day you must really tell us nothing but facts.

L. I am sworn; but you won't like it, a bit.

MARY. Now, first of all, what do you mean by "bricks"?—Are the smallest particles of minerals all of some accurate shape, like bricks?

L. I do not know. Miss Mary; I do not even know if anybody knows. The smallest atoms which are visibly and practically put together to make large crystals, may better be described as "limited in fixed directions" than as "of fixed forms." But I can tell you nothing clear about ultimate atoms: you will find the idea of little bricks, or, perhaps, of little spheres, available for all the uses you will have to put it to.

MARY. Well, it's very provoking; one seems always to be stopped just when one is coming to the very thing one wants to know.

L. No, Mary, for we should not wish to know anything but what is easily and assuredly knowable. There's no end to it. If I could show you, or myself, a group of ultimate atoms, quite clearly, in this magnifying glass, we should both be presently vexed, because we could not break them in two pieces, and see their insides.

MARY. Well then, next, what do you mean by the flying of the bricks? What is it the atoms do, that is like flying?

L. When they are dissolved, or uncrystallized, they are really separated from each other, like a swarm of gnats in the air, or like a shoal of fish in the sea;—generally at about equal distances. In currents of solutions, or at different depths of them, one part may be more full of the dissolved atoms than another; but on the whole, you may think of them as equidistant, like the spots in the print of your gown. If they are separated by force of heat only, the substance is said to be melted; if they are separated by any other substance, as particles of sugar by water, they are said to be "dissolved." Note this distinction carefully, all of you.

DORA. I will be very particular. When next you tell me there isn't sugar enough in your tea, I will say, "It is not yet dissolved, sir."

L. I tell you what shall be dissolved, Miss Dora; and that's the present parliament, if the members get too saucy.

(DORA folds her hands and casts down her eyes.)

L. (proceeds in state). Now, Miss Mary, you know already, I believe, that nearly everything will melt, under a sufficient heat, like wax. Limestone melts (under pressure); sand melts; granite melts; the lava of a volcano is a mixed mass of many kinds of rocks, melted: and any melted substance nearly always, if not always, crystallizes as it cools; the more slowly the more perfectly. Water melts at what we call the freezing, but might just as wisely, though not as conveniently, call the melting, point; and radiates as it cools into the most beautiful of all known crystals. Glass melts at a greater heat, and will crystallize, if you let it cool slowly enough, in stars, much like snow. Gold needs more heat to melt it, but crystallizes also exquisitely, as I will presently show you. Arsenic and sulphur crystallize from their vapors. Now in any of these cases, either of melted, dissolved, or vaporous bodies, the

particles are usually separated from each other, either by heat, or by an intermediate substance; and in crystallizing they are both brought nearer to each other, and packed, so as to fit as closely as possible: the essential part of the business being not the bringing together, but the packing. Who packed your trunk for you, last holidays, Isabel?

ISABEL. Lily does, always.

L. And how much can you allow for Lily's good packing, in guessing what will go into the trunk?

ISABEL. Oh! I bring twice as much as the trunk holds. Lily always gets everything in.

LILY. Ah! but, Isey, if you only knew what a time it takes! and since you've had those great hard buttons on your frocks, I can't do anything with them. Buttons won't go anywhere, you know.

L. Yes, Lily, it would be well if she only knew what a time it takes; and I wish any of us knew what a time crystallization takes, for that is consummately fine packing. The particles of the rock are thrown down, just as Isabel brings her things—in a heap; and innumerable Lilies, not of the valley, but of the rock, come to pack them. But it takes such a time!

However, the best—out and out the best—way of understanding the thing, is to crystallize yourselves.

THE AUDIENCE. Ourselves!

L. Yes; not merely as you did the other day, carelessly on the schoolroom forms; but carefully and finely, out in the playground. You can play at crystallization there as much as you please.

KATHLEEN and JESSIE. Oh! how?—how?

L. First, you must put yourselves together, as close as you can, in the middle of the grass, and form, for first practice, any figure you like.

JESSIE. Any dancing figure, do you mean?

L. No; I mean a square, or a cross, or a diamond. Any figure you like, standing close together. You had better outline it first on the turf, with sticks, or pebbles, so as to see that it is rightly drawn; then get into it and enlarge or diminish it at one side, till you are all quite in it, and no empty space left.

DORA. Crinoline and all?

L. The crinoline may stand eventually for rough crystalline surface, unless you pin it in; and then you may make a polished crystal of yourselves.

LILY. Oh, we'll pin it in—we'll pin it in!

L. Then, when you are all in the figure, let every one note her place, and who is next her on each side; and let the outsiders count how many places they stand from the corners.

KATHLEEN. Yes, yes,—and then?

L. Then you must scatter all over the playground—right over it from side to side, and end to end; and put yourselves all at equal distances from each other, everywhere. You needn't mind doing it very accurately, but so as to be nearly equidistant; not less than about three yards apart from each other, on every side.

JESSIE. We can easily cut pieces of string of equal length, to hold. And then? L. Then, at a given signal, let everybody walk, at the same rate, towards the outlined figure in the middle. You had better sing as you walk; that will keep you in good time. And as you close in towards it, let each take her place, and the next comers fit themselves in beside the first ones, till you are all in the figure again.

KATHLEEN. Oh! how we shall run against each other. What fun it will be!

L. No, no, Miss Katie; I can't allow any running against each other. The atoms never do that, whatever human creatures do. You must all know your places, and find your way to them without jostling.

LILY. But how ever shall we do that?

ISABEL. Mustn't the ones in the middle be the nearest, and the outside ones farther off—when we go away to scatter, I mean?

L. Yes; you must be very careful to keep your order; you will soon find out how to do it; it is only like soldiers forming square, except that each must stand still in her place as she reaches it,

and the others come round her; and you will have much more complicated figures, afterwards, to form, than squares.

ISABEL. I'll put a stone at my place: then I shall know it.

L. You might each nail a bit of paper to the turf, at your place, with your name upon it: but it would be of no use, for if you don't know your places, you will make a fine piece of business of it, while you are looking for your names. And, Isabel, if with a little head, and eyes, and a brain (all of them very good and serviceable of their kind, as such things go), you think you cannot know your place without a stone at it, after examining it well,—how do you think each atom knows its place, when it never was there before, and there's no stone at it?

ISABEL. But does every atom know its place?

L. How else could it get there?

MARY. Are they not attracted into their places?

L. Cover a piece of paper with spots, at equal intervals; and then imagine any kind of attraction you choose, or any law of attraction, to exist between the spots, and try how, on that permitted supposition, you can attract them into the figure of a Maltese cross, in the middle of the paper.

MARY (having tried it). Yes; I see that I cannot:—one would need all kinds of attractions, in different ways, at different places. But you do not mean that the atoms are alive?

L. What is it to be alive?

DORA. There now; you're going to be provoking, I know.

L. I do not see why it should be provoking to be asked what it is to be alive. Do you think you don't know whether you are alive or not?

(ISABEL skips to the end of the room and back.)

L. Yes, Isabel, that's all very fine; and you and I may call that being alive: but a modern philosopher calls it being in a "mode of motion." It requires a certain quantity of heat to take you to the sideboard; and exactly the same quantity to bring you back again. That's all.

ISABEL. No, it isn't. And besides, I'm not hot.

L. I am, sometimes, at the way they talk. However, you know, Isabel, you might have been a particle of a mineral, and yet have been carried round the room, or anywhere else, by chemical forces, in the liveliest way.

ISABEL. Yes; but I wasn't carried: I carried myself.

L. The fact is, mousie, the difficulty is not so much to say what makes a thing alive, as what makes it a Self. As soon as you are shut off from the rest of the universe into a Self, you begin to be alive.

VIOLET (indignant). Oh, surely—surely that cannot be so. Is not all the life of the soul in communion, not separation?

L. There can be no communion where there is no distinction. But we shall be in an abyss of metaphysics presently, if we don't look out; and besides, we must not be too grand, to-day, for the younger children. We'll be grand, some day, by ourselves, if we must. (The younger children are not pleased, and prepare to remonstrate; but, knowing by experience, that all conversations in which the word "communion" occurs, are unintelligible, think better of it.) Meantime, for broad answer about the atoms. I do not think we should use the word "life," of any energy which does not belong to a given form. A seed, or an egg, or a young animal, are properly called "alive" with respect to the force belonging to those forms, which consistently develops that form, and no other. But the force which crystallizes a mineral appears to be chiefly external, and it does not produce an entirely determinate and individual form, limited in size, but only an aggregation, in which some limiting laws must be observed.

MARY. But I do not see much difference, that way, between a crystal and a tree.

L. Add, then, that the mode of the energy in a living thing implies a continual change in its elements; and a period for its end. So you may define life by its attached negative, death; and still more

by its attached positive, birth. But I won't be plagued any more about this, just now; if you choose to think the crystals alive, do, and welcome. Rocks have always been called "living" in their native place.

MARY. There's one question more; then I've done.

L. Only one?

MARY. Only one.

L. But if it is answered, won't it turn into two?

MARY. No; I think it will remain single, and be comfortable.

L. Let me hear it.

MARY. You know, we are to crystallize ourselves out of the whole playground. Now, what playground have the minerals! Where are they scattered before they are crystallized; and where are the crystals generally made?

L. That sounds to me more like three questions than one, Mary. If it is only one, it is a wide one.

MARY. I did not say anything about the width of it.

L. Well, I must keep it within the best compass I can. When rocks either dry from a moist state, or cool from a heated state, they necessarily alter in bulk; and cracks, or open spaces, form in them in all directions. These cracks must be filled up with solid matter, or the rock would eventually become a ruinous heap. So, sometimes by water, sometimes by vapor, sometimes nobody knows how, crystallizable matter is brought from somewhere, and fastens itself in these open spaces, so as to bind the rock together again with crystal cement. A vast quantity of hollows are formed in lavas by bubbles of gas, just as the holes are left in bread well baked. In process of time these cavities are generally filled with various crystals.

MARY. But where does the crystallizing substance come from?

L. Sometimes out of the rock itself; sometimes from below or above, through the veins. The entire substance of the contracting rock may be filled with liquid, pressed into it so as to fill every pore;—or with mineral vapor;—or it may be so charged at one place, and empty at another. There's no end to the "may be's." But all that you need fancy, for our present purpose, is that hollows in the rocks, like the caves in Derbyshire, are traversed by liquids or vapor containing certain elements in a more or less free or separate state, which crystallize on the cave walls.

SIBYL. There now;—Mary has had all her questions answered: it's my turn to have mine.

L. Ah, there's a conspiracy among you, I see. I might have guessed as much.

DORA. I'm sure you ask us questions enough! How can you have the heart, when you dislike so to be asked them yourself?

L. My dear child, if people do not answer questions, it does not matter how many they are asked, because they've no trouble with them. Now, when I ask you questions, I never expect to be answered; but when you ask me, you always do; and it's not fair.

DORA. Very well, we shall understand, next time.

SIBYL. No, but seriously, we all want to ask one thing more, quite dreadfully.

L. And I don't want to be asked it, quite dreadfully; but you'll have your own way, of course.

SIBYL. We none of us understand about the lower Pthah. It was not merely yesterday; but in all we have read about him in Wilkinson, or in any book, we cannot understand what the Egyptians put their god into that ugly little deformed shape for.

L. Well, I'm glad it's that sort of question; because I can answer anything I like to that.

EGYPT. Anything you like will do quite well for us; we shall be pleased with the answer, if you are.

L. I am not so sure of that, most gracious queen; for I must begin by the statement that queens seem to have disliked all sorts of work, in those days, as much as some queens dislike sewing to-day.

EGYPT. Now, it's too bad! and just when I was trying to say the civillest thing I could!

L. But, Egypt, why did you tell me you disliked sewing so?

EGYPT. Did not I show you how the thread cuts my fingers? and I always get cramp, somehow, in my neck, if I sew long.

L. Well, I suppose the Egyptian queens thought everybody got cramp in their neck, if they sewed long; and that thread always cut people's fingers. At all events, every kind of manual labor was despised both by them, and the Greeks; and, while they owned the real good and fruit of it, they yet held it a degradation to all who practiced it. Also, knowing the laws of life thoroughly, they perceived that the special practice necessary to bring any manual art to perfection strengthened the body distortedly; one energy or member gaining at the expense of the rest. They especially dreaded and despised any kind of work that had to be done near fire: yet, feeling what they owed to it in metal-work, as the basis of all other work, they expressed this mixed reverence and scorn in the varied types of the lame Hephaestus, and the lower Pthah.

SIBYL. But what did you mean by making him say "Everything great I can make small, and everything small great"?

L. I had my own separate meaning in that. We have seen in modern times the power of the lower Pthah developed in a separate way, which no Greek nor Egyptian could have conceived. It is the character of pure and eyeless manual labor to conceive everything as subjected to it: and, in reality, to disgrace and diminish all that is so subjected, aggrandizing itself, and the thought of itself, at the expense of all noble things. I heard an orator, and a good one too, at the Working Men's College, the other day, make a great point in a description of our railroads; saying, with grandly conducted emphasis, "They have made man greater, and the world less." His working audience were mightily pleased; they thought it so very fine a thing to be made bigger themselves; and all the rest of the world less. I should have enjoyed asking them (but it would have been a pity—they were so pleased), how much less they would like to have the world made;—and whether, at present, those of them really felt the biggest men, who lived in the least houses.

SIBYL. But then, why did you make Pthah say that he could make weak things strong, and small things great?

L. My dear, he is a boaster and self-assertor, by nature; but it is so far true. For instance, we used to have a fair in our neighborhood—a very fine fair we thought it. You never saw such an one; but if you look at the engraving of Turner's "St. Catherine's Hill," you will see what it was like. There were curious booths, carried on poles; and peep-shows; and music, with plenty of drums and cymbals; and much barley-sugar and gingerbread, and the like: and in the alleys of this fair the London populace would enjoy themselves, after their fashion, very thoroughly. Well, the little Pthah set to work upon it one day; he made the wooden poles into iron ones, and put them across, like his own crooked legs, so that you always fall over them if you don't look where you are going; and he turned all the canvas into panes of glass, and put it up on his iron cross-poles; and made all the little booths into one great booth;—and people said it was very fine, and a new style of architecture; and Mr. Dickens said nothing was ever like it in Fairy-land, which was very true. And then the little Pthah set to work to put fine fairings in it; and he painted the Nineveh bulls afresh, with the blackest eyes he could paint (because he had none himself), and he got the angels down from Lincoln choir, and gilded their wings like his gingerbread of old times; and he sent for everything else he could think of, and put it in his booth. There are the casts of Niobe and her children; and the Chimpanzee; and the wooden Caffres and New-Zealanders; and the Shakespeare House; and Le Grand Blondin, and Le Petit Blondin; and Handel; and Mozart; and no end of shops, and buns, and beer; and all the little-Pthah-worshippers say, never was anything so sublime!

SIBYL. Now, do you mean to say you never go to these Crystal Palace concerts? they're as good as good can be.

L. I don't go to the thundering things with a million of bad voices in them. When I want a song, I get Julia Mannerling and Lucy Bertram and Counselor Pleydell to sing "We be three poor Mariners" to me; then I've no headache next morning. But I do go to the smaller concerts, when I can; for they

are very good, as you say, Sibyl: and I always get a reserved seat somewhere near the orchestra, where I am sure I can see the kettle-drummer drum.

SIBYL. Now DO be serious, for one minute.

L. I am serious—never was more so. You know one can't see the modulation of violinists' fingers, but one can see the vibration of the drummer's hand; and it's lovely.

SIBYL. But fancy going to a concert, not to hear, but to see!

L. Yes, it is very absurd. The quite right thing, I believe, is to go there to talk. I confess, however, that in most music, when very well done, the doing of it is to me the chiefly interesting part of the business. I'm always thinking how good it would be for the fat, supercilious people, who care so little for their half-crown's worth, to be set to try and do a half-crown's worth of anything like it.

MARY. But surely that Crystal Palace is a great good and help to the people of London?

L. The fresh air of the Norwood hills is, or was, my dear; but they are spoiling that with smoke as fast as they can. And the palace (as they call it) is a better place for them, by much, than the old fair; and it is always there, instead of for three days only; and it shuts up at proper hours of night. And good use may be made of the things in it, if you know how: but as for its teaching the people, it will teach them nothing but the lowest of the lower Pthah's work—nothing but hammer and tongs. I saw a wonderful piece, of his doing, in the place, only the other day. Some unhappy metal-worker—I am not sure if it was not a metal-working firm—had taken three years to make a Golden eagle.

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