

ON GENERATION AND CORRUPTION

by Aristotle

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Book I

1

OUR next task is to study coming-to-be and passing-away. We are to distinguish the causes, and to state the definitions, of these processes considered in general-as changes predicable uniformly of all the things that come-to-be and pass-away by nature. Further, we are to study growth and 'alteration'. We must inquire what each of them is; and whether 'alteration' is to be identified with coming-to-be, or whether to these different names there correspond two separate processes with distinct natures.

On this question, indeed, the early philosophers are divided. Some of them assert that the so-called 'unqualified coming-to-be' is 'alteration', while others maintain that 'alteration' and coming-to-be are distinct. For those who say that the universe is one something (i.e. those who generate all things out of one thing) are bound to assert that coming-to-be is 'alteration', and that whatever 'comes-to-be' in the proper sense of the term is 'being altered': but those who make the matter of things more than one must distinguish coming-to-be from 'alteration'. To this latter class belong Empedocles, Anaxagoras, and Leucippus. And yet Anaxagoras himself failed to understand his own utterance. He says, at all events, that coming-to-be and passing-away are the same as 'being altered': yet, in common with other thinkers, he affirms that the elements are many. Thus Empedocles holds that the corporeal elements are four, while all the elements-including those which initiate movement-are six in number; whereas Anaxagoras agrees with Leucippus and Democritus that the elements are infinite.

(Anaxagoras posits as elements the 'homoeomeries', viz. bone, flesh, marrow, and everything else which is such that part and whole are the same in name and nature; while Democritus and Leucippus say that there are indivisible bodies, infinite both in number and in the varieties of their shapes, of which everything else is composed-the compounds differing one from another according to the shapes, 'positions', and 'groupings' of their constituents.)

For the views of the school of Anaxagoras seem diametrically opposed to those of the followers of Empedocles. Empedocles says that Fire, Water, Air, and Earth are four elements, and are thus 'simple' rather than flesh, bone, and bodies which, like these, are 'homoeomeries'. But the followers of Anaxagoras regard the 'homoeomeries' as 'simple' and elements, whilst they affirm that Earth, Fire, Water, and Air are composite; for each of these is (according to them) a 'common seminary' of all the 'homoeomeries'.

Those, then, who construct all things out of a single element, must maintain that coming-to-be and passing-away are 'alteration'. For they must affirm that the underlying something always remains identical and one; and change of such a substratum is what we call 'altering'. Those, on the other hand, who make the ultimate kinds of things more than one, must maintain that 'alteration' is distinct from coming-to-be: for coming-to-be and passing-away result from the consilience and the dissolution of the many kinds. That is why Empedocles too uses language to this effect, when he says 'There is no coming-to-be of anything, but only a mingling and a divorce of what has been mingled'. Thus it is clear (i) that to describe coming-to-be and passing-away in these terms is in accordance with their fundamental assumption, and (ii) that they do in fact so describe them: nevertheless, they too must recognize 'alteration' as a fact distinct from coming to-be, though it is impossible for them to do so consistently with what they say.

That we are right in this criticism is easy to perceive. For 'alteration' is a fact of observation. While the substance of the thing remains unchanged, we see it 'altering' just as we see in it the changes of magnitude called 'growth' and 'diminution'. Nevertheless, the statements of those who posit more 'original reals' than one make 'alteration' impossible. For 'alteration, as we assert, takes place in respect to certain qualities: and these qualities (I mean, e.g. hot-cold, white-black, dry-moist, soft-hard, and so forth) are, all of them, differences characterizing the 'elements'. The actual words of Empedocles may be quoted in illustration-

The sun everywhere bright to see, and hot,
The rain everywhere dark and cold;

and he distinctively characterizes his remaining elements in a similar manner. Since, therefore, it is not possible for Fire to become Water, or Water to become Earth, neither will it be possible for anything white to become black, or anything soft to become hard; and the same argument applies to all the other qualities. Yet this is what 'alteration' essentially is.

It follows, as an obvious corollary, that a single matter must always be

assumed as underlying the contrary 'poles' of any change whether change of place, or growth and diminution, or 'alteration'; further, that the being of this matter and the being of 'alteration' stand and fall together. For if the change is 'alteration', then the substratum is a single element; i.e. all things which admit of change into one another have a single matter. And, conversely, if the substratum of the changing things is one, there is 'alteration'.

Empedocles, indeed, seems to contradict his own statements as well as the observed facts. For he denies that any one of his elements comes-to-be out of any other, insisting on the contrary that they are the things out of which everything else comes-to-be; and yet (having brought the entirety of existing things, except Strife, together into one) he maintains, simultaneously with this denial, that each thing once more comes-to-be out of the One. Hence it was clearly out of a One that this came-to-be Water, and that Fire, various portions of it being separated off by certain characteristic differences or qualities-as indeed he calls the sun 'white and hot', and the earth 'heavy and hard'. If, therefore, these characteristic differences be taken away (for they can be taken away, since they came-to-be), it will clearly be inevitable for Earth to come to-be out of Water and Water out of Earth, and for each of the other elements to undergo a similar transformation-not only then, but also now-if, and because, they change their qualities. And, to judge by what he says, the qualities are such that they can be 'attached' to things and can again be 'separated' from them, especially since Strife and Love are still fighting with one another for the mastery. It was owing to this same conflict that the elements were generated from a One at the former period. I say 'generated', for presumably Fire, Earth, and Water had no distinctive existence at all while merged in one.

There is another obscurity in the theory Empedocles. Are we to regard the One as his 'original real'? Or is it the Many-i.e. Fire and Earth, and the bodies co-ordinate with these? For the One is an 'element' in so far as it underlies the process as matter-as that out of which Earth and Fire come-to-be through a change of qualities due to 'the motion'. On the other hand, in so far as the One results from composition (by a consilience of the Many), whereas they result from disintegration the Many are more 'elementary' than the One, and prior to it in their nature.

2

We have therefore to discuss the whole subject of 'unqualified' coming-to-be and passingaway; we have to inquire whether these changes do or do not occur and, if they occur, to explain the precise conditions of their

occurrence. We must also discuss the remaining forms of change, viz. growth and 'alteration'. For though, no doubt, Plato investigated the conditions under which things come-to-be and pass-away, he confined his inquiry to these changes; and he discussed not all coming-to-be, but only that of the elements. He asked no questions as to how flesh or bones, or any of the other similar compound things, come-to-be; nor again did he examine the conditions under which 'alteration' or growth are attributable to things.

A similar criticism applies to all our predecessors with the single exception of Democritus. Not one of them penetrated below the surface or made a thorough examination of a single one of the problems. Democritus, however, does seem not only to have thought carefully about all the problems, but also to be distinguished from the outset by his method. For, as we are saying, none of the other philosophers made any definite statement about growth, except such as any amateur might have made. They said that things grow 'by the accession of like to like', but they did not proceed to explain the manner of this accession. Nor did they give any account of 'combination': and they neglected almost every single one of the remaining problems, offering no explanation, e.g. of 'action' or 'passion' how in physical actions one thing acts and the other undergoes action. Democritus and Leucippus, however, postulate the 'figures', and make 'alteration' and coming-to-be result from them. They explain coming-to-be and passing-away by their 'dissociation' and 'association', but 'alteration' by their 'grouping' and 'Position'. And since they thought that the 'truth lay in the appearance, and the appearances are conflicting and infinitely many, they made the 'figures' infinite in number. Hence-owing to the changes of the compound-the same thing seems different and conflicting to different people: it is 'transposed' by a small additional ingredient, and appears utterly other by the 'transposition' of a single constituent. For Tragedy and Comedy are both composed of the same letters.

Since almost all our predecessors think (i) that coming-to-be is distinct from 'alteration', and (ii) that, whereas things 'alter' by change of their qualities, it is by 'association' and 'dissociation' that they come-to-be and pass-away, we must concentrate our attention on these theses. For they lead to many perplexing and well-grounded dilemmas. If, on the one hand, coming-to-be is 'association', many impossible consequences result: and yet there are other arguments, not easy to unravel, which force the conclusion upon us that coming-to-be cannot possibly be anything else. If, on the other hand, coming-to-be is not 'association', either there is no such thing as coming-to-be at all or it is 'alteration': or else we must endeavour to unravel this dilemma too-and a stubborn one we shall find it. The fundamental

question, in dealing with all these difficulties, is this: 'Do things come-to-be and "alter" and grow, and undergo the contrary changes, because the primary "reals" are indivisible magnitudes? Or is no magnitude indivisible?' For the answer we give to this question makes the greatest difference. And again, if the primary 'reals' are indivisible magnitudes, are these bodies, as Democritus and Leucippus maintain? Or are they planes, as is asserted in the Timaeus?

To resolve bodies into planes and no further-this, as we have also remarked elsewhere, in itself a paradox. Hence there is more to be said for the view that there are indivisible bodies. Yet even these involve much of paradox. Still, as we have said, it is possible to construct 'alteration' and coming-to-be with them, if one 'transposes' the same by 'turning' and 'intercontact', and by 'the varieties of the figures', as Democritus does. (His denial of the reality of colour is a corollary from this position: for, according to him, things get coloured by 'turning' of the 'figures'.) But the possibility of such a construction no longer exists for those who divide bodies into planes. For nothing except solids results from putting planes together: they do not even attempt to generate any quality from them.

Lack of experience diminishes our power of taking a comprehensive view of the admitted facts. Hence those who dwell in intimate association with nature and its phenomena grow more and more able to formulate, as the foundations of their theories, principles such as to admit of a wide and coherent development: while those whom devotion to abstract discussions has rendered unobservant of the facts are too ready to dogmatize on the basis of a few observations. The rival treatments of the subject now before us will serve to illustrate how great is the difference between a 'scientific' and a 'dialectical' method of inquiry. For, whereas the Platonists argue that there must be atomic magnitudes 'because otherwise "The Triangle" will be more than one', Democritus would appear to have been convinced by arguments appropriate to the subject, i.e. drawn from the science of nature. Our meaning will become clear as we proceed. For to suppose that a body (i.e. a magnitude) is divisible through and through, and that this division is possible, involves a difficulty. What will there be in the body which escapes the division?

If it is divisible through and through, and if this division is possible, then it might be, at one and the same moment, divided through and through, even though the dividings had not been effected simultaneously: and the actual occurrence of this result would involve no impossibility. Hence the same principle will apply whenever a body is by nature divisible through and through, whether by bisection, or generally by any method whatever: nothing

impossible will have resulted if it has actually been divided-not even if it has been divided into innumerable parts, themselves divided innumerable times. Nothing impossible will have resulted, though perhaps nobody in fact could so divide it.

Since, therefore, the body is divisible through and through, let it have been divided. What, then, will remain? A magnitude? No: that is impossible, since then there will be something not divided, whereas *ex hypothesis* the body was divisible through and through. But if it be admitted that neither a body nor a magnitude will remain, and yet division is to take place, the constituents of the body will either be points (i.e. without magnitude) or absolutely nothing. If its constituents are nothings, then it might both come-to-be out of nothings and exist as a composite of nothings: and thus presumably the whole body will be nothing but an appearance. But if it consists of points, a similar absurdity will result: it will not possess any magnitude. For when the points were in contact and coincided to form a single magnitude, they did not make the whole any bigger (since, when the body was divided into two or more parts, the whole was not a bit smaller or bigger than it was before the division): hence, even if all the points be put together, they will not make any magnitude.

But suppose that, as the body is being divided, a minute section-a piece of sawdust, as it were-is extracted, and that in this sense-a body 'comes away' from the magnitude, evading the division. Even then the same argument applies. For in what sense is that section divisible? But if what 'came away' was not a body but a separable form or quality, and if the magnitude is 'points or contacts thus qualified': it is paradoxical that a magnitude should consist of elements, which are not magnitudes. Moreover, where will the points be? And are they motionless or moving? And every contact is always a contact of two somethings, i.e. there is always something besides the contact or the division or the point.

These, then, are the difficulties resulting from the supposition that any and every body, whatever its size, is divisible through and through. There is, besides, this further consideration. If, having divided a piece of wood or anything else, I put it together, it is again equal to what it was, and is one. Clearly this is so, whatever the point at which I cut the wood. The wood, therefore, has been divided potentially through and through. What, then, is there in the wood besides the division? For even if we suppose there is some quality, yet how is the wood dissolved into such constituents and how does it come-to-be out of them? Or how are such constituents separated so as to exist apart from one another? Since, therefore, it is impossible for magnitudes to consist of contacts or points, there must be indivisible bodies

and magnitudes. Yet, if we do postulate the latter, we are confronted with equally impossible consequences, which we have examined in other works.' But we must try to disentangle these perplexities, and must therefore formulate the whole problem over again.

On the one hand, then, it is in no way paradoxical that every perceptible body should be indivisible as well as divisible at any and every point. For the second predicate will attach to it potentially, but the first actually. On the other hand, it would seem to be impossible for a body to be, even potentially, divisible at all points simultaneously. For if it were possible, then it might actually occur, with the result, not that the body would simultaneously be actually both (indivisible and divided), but that it would be simultaneously divided at any and every point. Consequently, nothing will remain and the body will have passed-away into what is incorporeal: and so it might come-to-be again either out of points or absolutely out of nothing. And how is that possible?

But now it is obvious that a body is in fact divided into separable magnitudes which are smaller at each division-into magnitudes which fall apart from one another and are actually separated. Hence (it is urged) the process of dividing a body part by part is not a 'breaking up' which could continue ad infinitum; nor can a body be simultaneously divided at every point, for that is not possible; but there is a limit, beyond which the 'breaking up' cannot proceed. The necessary consequence-especially if coming-to-be and passing-away are to take place by 'association' and 'dissociation' respectively-is that a body must contain atomic magnitudes which are invisible. Such is the argument which is believed to establish the necessity of atomic magnitudes: we must now show that it conceals a faulty inference, and exactly where it conceals it.

For, since point is not 'immediately-next' to point, magnitudes are 'divisible through and through' in one sense, and yet not in another. When, however, it is admitted that a magnitude is 'divisible through and through', it is thought there is a point not only anywhere, but also everywhere, in it: hence it is supposed to follow, from the admission, that the magnitude must be divided away into nothing. For it is supposed-there is a point everywhere within it, so that it consists either of contacts or of points. But it is only in one sense that the magnitude is 'divisible through and through', viz. in so far as there is one point anywhere within it and all its points are everywhere within it if you take them singly one by one. But there are not more points than one anywhere within it, for the points are not 'consecutive': hence it is not simultaneously 'divisible through and through'. For if it were, then, if it be divisible at its centre, it will be divisible also at a point 'immediately-next' to its centre. But it is not so

divisible: for position is not 'immediately-next' to position, nor point to point-in other words, division is not 'immediately-next' to division, nor composition to composition.

Hence there are both 'association' and 'dissociation', though neither (a) into, and out of, atomic magnitudes (for that involves many impossibilities), nor (b) so that division takes place through and through-for this would have resulted only if point had been 'immediately-next' to point: but 'dissociation' takes place into small (i.e. relatively small) parts, and 'association' takes place out of relatively small parts.

It is wrong, however, to suppose, as some assert, that coming-to-be and passing-away in the unqualified and complete sense are distinctively defined by 'association' and 'dissociation', while the change that takes place in what is continuous is 'alteration'. On the contrary, this is where the whole error lies. For unqualified coming-to-be and passing-away are not effected by 'association' and 'dissociation'. They take place when a thing changes, from this to that, as a whole. But the philosophers we are criticizing suppose that all such change is 'alteration': whereas in fact there is a difference. For in that which underlies the change there is a factor corresponding to the definition and there is a material factor. When, then, the change is in these constitutive factors, there will be coming-to-be or passing-away: but when it is in the thing's qualities, i.e. a change of the thing per accidents, there will be 'alteration'.

'Dissociation' and 'association' affect the thing's susceptibility to passing-away. For if water has first been 'dissociated' into smallish drops, air comes-to-be out of it more quickly: while, if drops of water have first been 'associated', air comes-to-be more slowly. Our doctrine will become clearer in the sequel.' Meantime, so much may be taken as established-viz. that coming-to-be cannot be 'association', at least not the kind of 'association' some philosophers assert it to be.

3

Now that we have established the preceding distinctions, we must first consider whether there is anything which comes-to-be and passes-away in the unqualified sense: or whether nothing comes-to-be in this strict sense, but everything always comes-to-be something and out of something-I mean, e.g. comes-to-be-healthy out of being-ill and ill out of being-healthy, comes-to-be-small out of being big and big out of being-small, and so on in every other instance. For if there is to be coming-to-be without qualification, 'something' must-without qualification-'come-to-be out of not-being', so that it

would be true to say that 'not-being is an attribute of some things'. For qualified coming-to-be is a process out of qualified not-being (e.g. out of not-white or not-beautiful), but unqualified coming-to-be is a process out of unqualified not-being.

Now 'unqualified' means either (i) the primary predication within each Category, or (ii) the universal, i.e. the all-comprehensive, predication. Hence, if 'unqualified not-being' means the negation of 'being' in the sense of the primary term of the Category in question, we shall have, in 'unqualified coming-to-be', a coming-to-be of a substance out of not-substance. But that which is not a substance or a 'this' clearly cannot possess predicates drawn from any of the other Categories either-e.g. we cannot attribute to it any quality, quantity, or position. Otherwise, properties would admit of existence in separation from substances. If, on the other hand, 'unqualified not-being' means 'what is not in any sense at all', it will be a universal negation of all forms of being, so that what comes-to-be will have to come-to-be out of nothing.

Although we have dealt with these problems at greater length in another work, where we have set forth the difficulties and established the distinguishing definitions, the following concise restatement of our results must here be offered: In one sense things come-to-be out of that which has no 'being' without qualification: yet in another sense they come-to-be always out of what is'. For coming-to-be necessarily implies the pre-existence of something which potentially 'is', but actually 'is not'; and this something is spoken of both as 'being' and as 'not-being'.

These distinctions may be taken as established: but even then it is extraordinarily difficult to see how there can be 'unqualified coming-to-be' (whether we suppose it to occur out of what potentially 'is', or in some other way), and we must recall this problem for further examination. For the question might be raised whether substance (i.e. the 'this') comes-to-be at all. Is it not rather the 'such', the 'so great', or the 'somewhere', which comes-to-be? And the same question might be raised about 'passing-away' also. For if a substantial thing comes-to-be, it is clear that there will 'be' (not actually, but potentially) a substance, out of which its coming-to-be will proceed and into which the thing that is passing-away will necessarily change. Then will any predicate belonging to the remaining Categories attach actually to this presupposed substance? In other words, will that which is only potentially a 'this' (which only potentially is), while without the qualification 'potentially' it is not a 'this' (i.e. is not), possess, e.g. any determinate size or quality or position? For (i) if it possesses none of these determinations actually, but all of them only potentially, the result is first that a being, which is

not a determinate being, is capable of separate existence; and in addition that coming-to-be proceeds out of nothing pre-existing-a thesis which, more than any other, preoccupied and alarmed the earliest philosophers. On the other hand (ii) if, although it is not a 'this somewhat' or a substance, it is to possess some of the remaining determinations quoted above, then (as we said) properties will be separable from substances.

We must therefore concentrate all our powers on the discussion of these difficulties and on the solution of a further question-viz. What is the cause of the perpetuity of coming-to-be? Why is there always unqualified, as well as partial, coming-to-be? Cause' in this connexion has two senses. It means (i) the source from which, as we say, the process 'originates', and (ii) the matter. It is the material cause that we have here to state. For, as to the other cause, we have already explained (in our treatise on Motion that it involves (a) something immovable through all time and (b) something always being moved. And the accurate treatment of the first of these-of the immovable 'originative source'-belongs to the province of the other, or 'prior', philosophy: while as regards 'that which sets everything else in motion by being itself continuously moved', we shall have to explain later' which amongst the so-called 'specific' causes exhibits this character. But at present we are to state the material cause-the cause classed under the head of matter-to which it is due that passing-away and coming-to-be never fail to occur in Nature. For perhaps, if we succeed in clearing up this question, it will simultaneously become clear what account we ought to give of that which perplexed us just now, i.e. of unqualified passingaway and coming-to-be.

Our new question too-viz. 'what is the cause of the unbroken continuity of coming-to-be?'-is sufficiently perplexing, if in fact what passes-away vanishes into 'what is not' and 'what is not' is nothing (since 'what is not' is neither a thing, nor possessed of a quality or quantity, nor in any place). If, then, some one of the things 'which are' constantly disappearing, why has not the whole of 'what is' been used up long ago and vanished away assuming of course that the material of all the several comings-to-be was finite? For, presumably, the unending continuity of coming-to-be cannot be attributed to the infinity of the material. That is impossible, for nothing is actually infinite. A thing is infinite only potentially, i.e. the dividing of it can continue indefinitely: so that we should have to suppose there is only one kind of coming-to-be in the world-viz. one which never fails, because it is such that what comes-to-be is on each successive occasion smaller than before. But in fact this is not what we see occurring.

Why, then, is this form of change necessarily ceaseless? Is it because the passing-away of this is a coming-to-be of something else, and the

coming-to-be of this a passing-away of something else?

The cause implied in this solution must no doubt be considered adequate to account for coming-to-be and passing-away in their general character as they occur in all existing things alike. Yet, if the same process is a coming-to-be of this but a passing-away of that, and a passing-away of this but a coming-to-be of that, why are some things said to come-to-be and pass-away without qualification, but others only with a qualification?

The distinction must be investigated once more, for it demands some explanation. (It is applied in a twofold manner.) For (i) we say 'it is now passing-away' without qualification, and not merely 'this is passing-away': and we call this change 'coming-to-be', and that 'passing-away', without qualification. And (ii) so-and-so 'comes-to-be-something', but does not 'come-to-be' without qualification; for we say that the student 'comes-to-be-learned', not 'comes-to-be' without qualification.

(i) Now we often divide terms into those which signify a 'this somewhat' and those which do not. And (the first form of) the distinction, which we are investigating, results from a similar division of terms: for it makes a difference into what the changing thing changes. Perhaps, e.g. the passage into Fire is 'coming-to-be' unqualified, but 'passing-away-of-something' (e.g. Earth): whilst the coming-to-be of Earth is qualified (not unqualified) 'coming-to-be', though unqualified 'passing-away' (e.g. of Fire). This would be the case on the theory set forth in Parmenides: for he says that the things into which change takes place are two, and he asserts that these two, viz. what is and what is not, are Fire and Earth. Whether we postulate these, or other things of a similar kind, makes no difference. For we are trying to discover not what undergoes these changes, but what is their characteristic manner. The passage, then, into what 'is' not except with a qualification is unqualified passing-away, while the passage into what 'is' without qualification is unqualified coming-to-be. Hence whatever the contrasted 'poles' of the changes may be whether Fire and Earth, or some other couple-the one of them will be 'a being' and the other 'a not-being'.

We have thus stated one characteristic manner in which unqualified will be distinguished from qualified coming-to-be and passing-away: but they are also distinguished according to the special nature of the material of the changing thing. For a material, whose constitutive differences signify more a 'this somewhat', is itself more 'substantial' or 'real': while a material, whose constitutive differences signify privation, is 'not real'. (Suppose, e.g. that 'the hot' is a positive predication, i.e. a 'form', whereas 'cold' is a privation, and that Earth and Fire differ from one another by these constitutive differences.)

The opinion, however, which most people are inclined to prefer, is that the

distinction depends upon the difference between 'the perceptible' and 'the imperceptible'. Thus, when there is a change into perceptible material, people say there is 'coming-to-be'; but when there is a change into invisible material, they call it 'passing-away'. For they distinguish 'what is' and 'what is not' by their perceiving and not-perceiving, just as what is knowable 'is' and what is unknowable 'is not'-perception on their view having the force of knowledge. Hence, just as they deem themselves to live and to 'be' in virtue of their perceiving or their capacity to perceive, so too they deem the things to 'be' qua perceived or perceptible-and in this they are in a sense on the track of the truth, though what they actually say is not true.

Thus unqualified coming-to-be and passingaway turn out to be different according to common opinion from what they are in truth. For Wind and Air are in truth more real more a 'this somewhat' or a 'form'-than Earth. But they are less real to perception which explains why things are commonly said to 'pass-away' without qualification when they change into Wind and Air, and to 'come-to-be' when they change into what is tangible, i.e. into Earth.

We have now explained why there is 'unqualified coming-to-be' (though it is a passingaway-of-something) and 'unqualified passingaway (though it is a coming-to-be-of-something). For this distinction of appellation depends upon a difference in the material out of which, and into which, the changes are effected. It depends either upon whether the material is or is not 'substantial', or upon whether it is more or less 'substantial', or upon whether it is more or less perceptible.

(ii) But why are some things said to 'come to-be' without qualification, and others only to 'come-to-be-so-and-so', in cases different from the one we have been considering where two things come-to-be reciprocally out of one another? For at present we have explained no more than this:-why, when two things change reciprocally into one another, we do not attribute coming-to-be and passing-away uniformly to them both, although every coming-to-be is a passing-away of something else and every passing-away some other thing's coming-to-be. But the question subsequently formulated involves a different problem-viz. why, although the learning thing is said to 'come-to-be-learned' but not to 'come-to-be' without qualification, yet the growing thing is said to 'come-to-be'.

The distinction here turns upon the difference of the Categories. For some things signify a this somewhat, others a such, and others a so-much. Those things, then, which do not signify substance, are not said to 'come-to-be' without qualification, but only to 'come-to-be-so-and-so'. Nevertheless, in all changing things alike, we speak of 'coming-to-be' when the thing comes-to-be something in one of the two Columns-e.g. in Substance, if it

comes-to-be Fire but not if it comes-to-be Earth; and in Quality, if it comes-to-be learned but not when it comes-to-be ignorant.

We have explained why some things come to-be without qualification, but not others both in general, and also when the changing things are substances and nothing else; and we have stated that the substratum is the material cause of the continuous occurrence of coming to-be, because it is such as to change from contrary to contrary and because, in substances, the coming-to-be of one thing is always a passing-away of another, and the passing-away of one thing is always another's coming-to-be. But there is no need even to discuss the other question we raised-viz. why coming-to-be continues though things are constantly being destroyed. For just as people speak of 'a passing-away' without qualification when a thing has passed into what is imperceptible and what in that sense 'is not', so also they speak of 'a coming-to-be out of a not-being' when a thing emerges from an imperceptible. Whether, therefore, the substratum is or is not something, what comes-to-be emerges out of a 'not-being': so that a thing comes-to-be out of a not-being' just as much as it 'passes-away into what is not'. Hence it is reasonable enough that coming-to-be should never fail. For coming-to-be is a passing-away of 'what is not' and passing-away is a coming to-be of 'what is not'.

But what about that which 'is' not except with a qualification? Is it one of the two contrary poles of the change-e.g. Earth (i.e. the heavy) a 'not-being', but Fire (i.e. the light) a 'being'? Or, on the contrary, does what is 'include Earth as well as Fire, whereas what is not' is matter-the matter of Earth and Fire alike? And again, is the matter of each different? Or is it the same, since otherwise they would not come-to-be reciprocally out of one another, i.e. contraries out of contraries? For these things-Fire, Earth, Water, Air-are characterized by 'the contraries'.

Perhaps the solution is that their matter is in one sense the same, but in another sense different. For that which underlies them, whatever its nature may be qua underlying them, is the same: but its actual being is not the same. So much, then, on these topics.

4

Next we must state what the difference is between coming-to-be and 'alteration'-for we maintain that these changes are distinct from one another.

Since, then, we must distinguish (a) the substratum, and (b) the property whose nature it is to be predicated of the substratum; and since change of each of these occurs; there is 'alteration' when the substratum is perceptible

and persists, but changes in its own properties, the properties in question being opposed to one another either as contraries or as intermediates. The body, e.g. although persisting as the same body, is now healthy and now ill; and the bronze is now spherical and at another time angular, and yet remains the same bronze. But when nothing perceptible persists in its identity as a substratum, and the thing changes as a whole (when e.g. the seed as a whole is converted into blood, or water into air, or air as a whole into water), such an occurrence is no longer 'alteration'. It is a coming-to-be of one substance and a passing-away of the other-especially if the change proceeds from an imperceptible something to something perceptible (either to touch or to all the senses), as when water comes-to-be out of, or passes-away into, air: for air is pretty well imperceptible. If, however, in such cases, any property (being one of a pair of contraries) persists, in the thing that has come-to-be, the same as it was in the thing which has passed-away-if, e.g. when water comes-to-be out of air, both are transparent or cold-the second thing, into which the first changes, must not be a property of this persistent identical something. Otherwise the change will be 'alteration.' Suppose, e.g. that the musical man passed-away and an unmusical man came-to-be, and that the man persists as something identical. Now, if 'musicalness and unmusicalness' had not been a property essentially inhering in man, these changes would have been a coming-to-be of unmusicalness and a passing-away of musicalness: but in fact 'musicalness and unmusicalness' are a property of the persistent identity, viz. man. (Hence, as regards man, these changes are 'modifications'; though, as regards musical man and unmusical man, they are a passing-away and a coming-to-be.) Consequently such changes are 'alteration.' When the change from contrary to contrary is in quantity, it is 'growth and diminution'; when it is in place, it is 'motion'; when it is in property, i.e. in quality, it is 'alteration': but, when nothing persists, of which the resultant is a property (or an 'accident' in any sense of the term), it is 'coming-to-be', and the converse change is 'passing-away'.

'Matter', in the most proper sense of the term, is to be identified with the substratum which is receptive of coming-to-be and passing-away: but the substratum of the remaining kinds of change is also, in a certain sense, 'matter', because all these substrata are receptive of 'contraries' of some kind. So much, then, as an answer to the questions (i) whether coming-to-be 'is' or 'is not'-i.e. what are the precise conditions of its occurrence and (ii) what 'alteration' is: but we have still to treat of growth.

We must explain (i) wherein growth differs from coming-to-be and from 'alteration', and ii) what is the process of growing and the sprocess of diminishing in each and all of the things that grow and diminish.

Hence our first question is this: Do these changes differ from one another solely because of a difference in their respective 'spheres'? In other words, do they differ because, while a change from this to that (viz. from potential to actual substance) is coming-to-be, a change in the sphere of magnitude is growth and one in the sphere of quality is 'alteration'-both growth and 'alteration' being changes from what is-potentially to what is-actually magnitude and quality respectively? Or is there also a difference in the manner of the change, since it is evident that, whereas neither what is 'altering' nor what is coming-to-be necessarily changes its place, what is growing or diminishing changes its spatial position of necessity, though in a different manner from that in which the moving thing does so? For that which is being moved changes its place as a whole: but the growing thing changes its place like a metal that is being beaten, retaining its position as a whole while its parts change their places. They change their places, but not in the same way as the parts of a revolving globe. For the parts of the globe change their places while the whole continues to occupy an equal place: but the parts of the rowing thing expand over an ever-increasing place and the parts of the diminishing thing contract within an ever-diminishing area.

It is clear, then, that these changes-the changes of that which is coming-to-be, of that which is 'altering', and of that which is growing-differ in manner as well as in sphere. But how are we to conceive the 'sphere' of the change which is growth and diminution? The sphere' of growing and diminishing is believed to be magnitude. Are we to suppose that body and magnitude come-to-be out of something which, though potentially magnitude and body, is actually incorporeal and devoid of magnitude? And since this description may be understood in two different ways, in which of these two ways are we to apply it to the process of growth? Is the matter, out of which growth takes place, (i) 'separate' and existing alone by itself, or (ii) 'separate' but contained in another body?

Perhaps it is impossible for growth to take place in either of these ways. For since the matter is 'separate', either (a) it will occupy no place (as if it were a point), or (b) it will be a 'void', i.e. a non-perceptible body. But the first of these alternatives is impossible. For since what comes-to-be out of this incorporeal and sizeless something will always be 'somewhere', it too must

be 'somewhere'-either intrinsically or indirectly. And the second alternative necessarily implies that the matter is contained in some other body. But if it is to be 'in' another body and yet remains 'separate' in such a way that it is in no sense a part of that body (neither a part of its substantial being nor an 'accident' of it), many impossibilities will result. It is as if we were to suppose that when, e.g. air comes-to-be out of water the process were due not to a change of the but to the matter of the air being 'contained in' the water as in a vessel. This is impossible. For (i) there is nothing to prevent an indeterminate number of matters being thus 'contained in' the water, so that they might come-to-be actually an indeterminate quantity of air; and (ii) we do not in fact see air coming-to-be out of water in this fashion, viz. withdrawing out of it and leaving it unchanged.

It is therefore better to suppose that in all instances of coming-to-be the matter is inseparable, being numerically identical and one with the 'containing' body, though isolable from it by definition. But the same reasons also forbid us to regard the matter, out of which the body comes-to-be, as points or lines. The matter is that of which points and lines are limits, and it is something that can never exist without quality and without form.

Now it is no doubt true, as we have also established elsewhere,' that one thing 'comes-to-be' (in the unqualified sense) out of another thing: and further it is true that the efficient cause of its coming-to-be is either (i) an actual thing (which is the same as the effect either generically-or the efficient cause of the coming-to-be of a hard thing is not a hard thing or specifically, as e.g. fire is the efficient cause of the coming-to-be of fire or one man of the birth of another), or (ii) an actuality. Nevertheless, since there is also a matter out of which corporeal substance itself comes-to-be (corporeal substance, however, already characterized as such-and-such a determinate body, for there is no such thing as body in general), this same matter is also the matter of magnitude and quality-being separable from these matters by definition, but not separable in place unless Qualities are, in their turn, separable.

It is evident, from the preceding development and discussion of difficulties, that growth is not a change out of something which, though potentially a magnitude, actually possesses no magnitude. For, if it were, the 'void' would exist in separation; but we have explained in a former work' that this is impossible. Moreover, a change of that kind is not peculiarly distinctive of growth, but characterizes coming-to-be as such or in general. For growth is an increase, and diminution is a lessening, of the magnitude which is there already-that, indeed, is why the growing thing must possess some magnitude. Hence growth must not be regarded as a process from a matter without magnitude to an actuality of magnitude: for this would be a body's

coming-to-be rather than its growth.

We must therefore come to closer quarters with the subject of our inquiry. We must grapple with it (as it were) from its beginning, and determine the precise character of the growing and diminishing whose causes we are investigating.

It is evident (i) that any and every part of the growing thing has increased, and that similarly in diminution every part has become smaller: also (ii) that a thing grows by the accession, and diminishes by the departure, of something. Hence it must grow by the accession either (a) of something incorporeal or (b) of a body. Now, if (a) it grows by the accession of something incorporeal, there will exist separate a void: but (as we have stated before) is impossible for a matter of magnitude to exist 'separate'. If, on the other hand (b) it grows by the accession of a body, there will be two bodies-that which grows and that which increases it-in the same place: and this too is impossible.

But neither is it open to us to say that growth or diminution occurs in the way in which e.g. air is generated from water. For, although the volume has then become greater, the change will not be growth, but a coming-to-be of the one-viz. of that into which the change is taking place-and a passing-away of the contrasted body. It is not a growth of either. Nothing grows in the process; unless indeed there be something common to both things (to that which is coming-to-be and to that which passed-away), e.g. 'body', and this grows. The water has not grown, nor has the air: but the former has passed-away and the latter has come-to-be, and-if anything has grown-there has been a growth of 'body.' Yet this too is impossible. For our account of growth must preserve the characteristics of that which is growing and diminishing. And these characteristics are three: (i) any and every part of the growing magnitude is made bigger (e.g. if flesh grows, every particle of the flesh gets bigger), (ii) by the accession of something, and (iii) in such a way that the growing thing is preserved and persists. For whereas a thing does not persist in the processes of unqualified coming-to-be or passing-away, that which grows or 'alters' persists in its identity through the 'altering' and through the growing or diminishing, though the quality (in 'alteration') and the size (in growth) do not remain the same. Now if the generation of air from water is to be regarded as growth, a thing might grow without the accession (and without the persistence) of anything, and diminish without the departure of anything-and that which grows need not persist. But this characteristic must be preserved: for the growth we are discussing has been assumed to be thus characterized.

One might raise a further difficulty. What is 'that which grows'? Is it that to which something is added? If, e.g. a man grows in his shin, is it the shin