

revise, develop the original programme. So it is that Euclid's visual geometry gave way to Cartesian coordinates, which in turn ~~was replaced~~ yielded place to the manifold departments of modern mathematics. ^{Again,} So Galileo's proposal of a reduction to geometry gave way to Newton's achievement of a reduction to mechanics, and that in turn to Einstein's reduction to electromagnetics. ^{Finally, and even more fundamentally,} ~~So too it has been that~~ the search of Galileo, Newton, Einstein, for a system of laws has given way to a search for states determined by probabilities. Galileo's programme stands to modern physics *merely* as the infant to the man; yet there is a continuity between ~~that~~ ^{the} programme and modern methods, because the original programme was based upon a discovery that subsequent discoveries automatically could correct and develop.

I. Intellectual Habit.

One's first notion of a science is apt to be that it is something residing in a text-book. So elementary geometry ~~was~~ for me was once contained in Hall and Stevens' Euclid. But a good master provides one with plenty of evidence to change such a view. He makes one do the exercises or riders, which, in the book, are only questions. He has a log of exam papers, and so can set questions that the book does not mention. He draws attention to the sequence, the strategy, of problems and theorems that explore triangles, ^{areas,} ~~and then~~ ^{and solids;} circles, and if, at first, one attends to this strategy because it lightens the burden ^{on} ~~of~~ memory, ~~it is~~ in afterthought one can recognize that it is at this point that one's idea of geometry ^{went} ~~undergoes~~ a transformation. Where before there had been a multiplicity, there now emerges a unity. ~~Where before one referred backwards to theorems that had previously been proved~~ a unity. Where before the multiplicity had been ^{held together} ~~united,~~ logically by backward references to what had already been proved, there now emerged a single idea that, so to speak, had invented the earlier theorems, so as to be able to set down briefly the proofs of later ones, indeed, that had invented both the earlier and the later theorems so that anyone could solve for himself ^{geometrical} any question at all ~~within a somewhat unrefined range.~~

It is here that the notion of intellectual habit can be reached. Aristotle remarked that, while one is learning, one needs a teacher but, when one has learnt, one operates on one's own. One has become a geometer, when, with ease, with readiness, with enjoyment, one tackles and solves any problem in geometry. The book, the sequence of problems and theorems, the exercises and examinations, fade into a forgotten past. Like the scaffolding, the ropes and pulleys, the buckets and the tools, used in erecting a building, they are removed and put away when the ^{work} building is completed. For geometry is something in the mind; it is a development of understanding; it does not depend upon the definitions and the axioms; rather it thinks them out and posits them. It is not a natura naturata but a natura naturans, though it be only the second nature of a habit. It is not a pensée pensée, ^{a noema,} but set out in concepts and tricked out with words and registered in a book, but a pensée pensante, ^{a noesis,} that at need is ready to generate whatever definitions and axioms, whatever theorems or solutions, may be called for, that can express itself in whatever words or signs may be best adapted to the capacity of one's hearers, that can criticize the text-books that are being published, pick out their laudable features, and draw attention to their short-comings. In brief, when one understands, ^{can judge and one} one can teach.

to attempt to present them or even to indicate them. It is one thing to read a paper and quite another to compose a treatise.

Still, this creates an obvious problem. It is easy enough to distinguish between a method and its grounds. It is rather difficult to make a method intelligible without a discussion of its grounds, for the grounds determine the interpretation of the ~~my~~ methodical rules, they reveal their efficacy, they supply the reasons for accepting and observing the rules. To obviate this difficulty, I propose to proceed by analogy. For, I believe, that there are three fundamental rules in all method. I shall begin by illustrating them from the development of method in natural science. I shall then attempt to indicate ^{the} form they take in theology.

Galileo was interested in the grand strategy of natural science, and his programme was the reduction of nature to geometry. What precisely such a reduction meant, he could illustrate by his discovery of the law of ~~ix~~ falling bodies. That such a reduction yielded knowledge of the reality of nature, he ^{attempted to} proved by distinguishing between primary and secondary qualities. Colours and sounds, tastes and ~~xxx~~ odours, the hot and cold and other ~~xxx~~ tactile qualities are not in things; like tickling, they are simply the effects of local motion produced in an animal. What is objective, is what can be measured; and what can be measured, is geometrical.

Now this programme has undergone ⁿ a number of basic revisions. Galileo and Kepler discovered laws, but Newton discovered a system of laws; and that system was not ~~gmx~~

Such a strategy can be operative in various manners. It can inform the work of an individual ~~xxx~~ without receiving from him any explicit formulation. It can both ~~inform~~ guide his work and be formulated explicitly without winning him any followers. It can result in the formation of a school of thought that contends with other schools. It can meet with universal acceptance and thereby ground a world-wide collaboration.

Again, the strategy that a method implements may be conceived in quite different ways. It may be thought to bring about its results almost mechanically. In varying degrees it may give fuller recognition to the role played by the uprightness, the sound judgement, the intellectual creativity of the persons engaged in the execution of its tasks. But even when a method lays the greatest stress on individual personality, it should, I believe, ~~xxx~~ possess some device that offers some promise of circumventing individual aberration and so of holding out the hope of ~~xxxxxxxxxxxxxxxx~~ effective collaboration and ultimate fulfilment.

If the foregoing remarks provide some indication of what I happen to understand by the name, method, they also make clear that a distinction has to be drawn between the grounds that justify a method and, on the other hand, the method itself. I may hope, in the time at my disposal, to communicate some notion of ^{the} ~~what I think~~ theological method ^{I employ.} ~~should be~~. On the other hand, the premisses on which a theological method rests and the exigences it has to meet are too manifold, too technical, and too complicated, for me

One may readily discern in Galileo's programme four elements: (1) a discovery; (2) a generalization of the discovery; (3) the notion of system; and (4) a philosophic theory of reality. All four are significant. The discovery stands to this day. The generalization of the discovery, the precept, Make other discoveries similar to the one made by Galileo, also stands. The notion of system calls for more nuanced comment. Galileo was right in urging that a mere collection of laws was not enough; he was mistaken in thinking that the requisite system lay ready to hand in geometry; but this mistake was ~~exaggerated~~ balanced by his generalization from a genuine discovery, for it was by making further, similar discoveries that it came to light that the system of laws arose from the laws themselves. Finally, while the philosophic theory of reality was extremely naive, it remains that the world of common sense and the world revealed by cumulative and unified scientific discoveries are extraordinarily different.

Now let me turn to my three basic rules of method. The first is a single word, Understand. The second is, Understand systematically. The third is, if I may introduce a jargon of my own, Develop positions and reverse counter-positions.

The meaning of the first is, in a way, platitudinous. It is equivalent to saying, Make discoveries. Again, if one thinks of theology as fides quaerens intellectum, faith in quest of understanding, then my first rule simply changes a declaration into a precept, Understand your faith.