









*Goldwin Smith*  
*Toronto*

CREEDS OF THE DAY.

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# CREEDS OF THE DAY;

OR,

## COLLATED OPINIONS OF REPUTABLE THINKERS.

BY

HENRY COKE.

*IN THREE SERIES OF LETTERS.*

VOL. II.

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# CREEDS OF THE DAY.



## LETTER VIII.

OF the three great divisions into which geologists, for convenience' sake, have classed the fossiliferous beds of the earth's crust, roughly speaking, the Primary ends with the coal, the Secondary with the chalk, and the Tertiary with the Pliocene. Then follows the post-Tertiary or Quaternary, including post-Pliocene and Recent, bringing us down to our own times.

This classification is based upon the character of the exuviæ of the plants and animals which prevail throughout each of these divisions. Hence the synonyms for each — Palæozoic, Mesozoic, and Kainozoic, signifying ancient, middle, and new, life. Without going into details, we may say that, of animals, fishes were the most striking feature of the first; reptiles, and afterwards birds, of the second; and mammals of the third, period. In like manner, this last stage is divided into Eocene, Miocene, and Pliocene,—terms invented by Lyell to signify the dawn of new, *i. e.*, existing life, its less and its more recent phases: *the relative age of the strata being determined by the proportion of extinct to living species or genera.*

When does man first appear upon the geological stage? And what geographical changes have taken place since his entrance thereon? A few words in reply to the latter

question will enable us to give a more intelligible answer to the former.

No geologist, so far as I am aware, has ever ventured to suggest that man existed before the Tertiary period: whether we have any evidence of him before the later Pliocene, or last of the Tertiary series, is extremely doubtful. As, however, several French geologists of eminence—amongst them M. de Mortillet, Dr. Hamy, and M. Quatrefages—believe that man inhabited France in the Miocene, we may as well run through the Tertiary epoch from its beginning.<sup>1</sup>

A few pages back we spoke of the elevation of the Alps and Pyrenees; of walruses swimming about over the "Cromer forest;" of the submersion of Wales under a sea of ice; of a subsequent upheaval; and of the junction of England with the Continent. All these great events belong to the Tertiary age. Let us see what is known concerning them, what their order of sequence, and what their relation to Man's antiquity.

To begin with the EOCENE: it is pretty generally admitted that Britain and North America were then connected, and that, except on the south coast of England, the present shores of Great Britain and Ireland were nowhere washed by any sea. The climate was tropical. In the London Clay—a formation belonging to the Eocene times—we find the remains of a luxuriant vegetation only to be met with in warm climates. There were palms, gigantic cacti, custard-apples, melons, &c. Speaking of the rivers and estuaries within the same area, Professor Owen says: "They were the feeding-places of soft turtles, and basking on the shores were to be seen crocodiles, alligators, and the long-snouted gavial, now only living in the rivers of India." Amongst the mammalia of the Upper

<sup>1</sup> "Doubtless the existence of man has been, by facts."—Quatrefages, *Miocene man will be proved, as The Human Species*, p. 151. that of Glacial and Pliocene man

Eocene, the most noteworthy of those which appear for the first time is the lemur, the lowest of the class of which man is the highest member.

At the close of the Eocene, the land was still rising, but during the MIOCENE, or second tertiary age, there were periods both of elevation and depression. Geologists are not quite agreed as to climate. Mr. Croll, quoting Professor Gastaldi, thinks there is strong evidence of extreme cold: "That the glaciers of the Southern Alps actually reached the sea, and sent their icebergs adrift over what are now the sunny plains of Northern Italy, is sufficient proof" of this. "Indeed, it may well have been as severe as, even if not more excessive than, the intensest severity of climate experienced during the last glacial epoch."<sup>1</sup> Professor Dawkins thinks these glaciers "tell us no more of the Miocene climate of Europe than the glaciers at present in New Zealand tell us of a climate which is sufficiently mild to allow of the growth of tree-ferns and areca-palms."<sup>2</sup> Mr. Wallace decides in favour of "uninterrupted warm climates in the temperate and northern zones." Of course, he does not dispute the Miocene glaciers in Italy, but he accounts for these by assuming that the Alps, which we know to have been greatly raised in Miocene times, were much higher than they are now; their diminished height being due to erosion. The accumulation of snow would then have been much greater, and would explain an extensive local glaciation which might be quite in keeping, as Professor Dawkins shows, with a warm climate and a rich flora.<sup>3</sup>

Mr. Croll, however, is strong upon the subject of former glacial epochs, and gives us reason to believe, there is hardly one of the great geological series, from the Cambrian to the Eocene, that does not show signs of ice-action. He justly remarks that evidence of glaciation, whether geological or palæontological, is in the long-run apter to be

<sup>1</sup> Croll, *Climate and Time*, p. 307.

<sup>2</sup> Dawkins, *Early Man in Britain*, p. 65.

<sup>3</sup> Cf. Lyell's *Principles*, &c., chap. x.

obliterated than that of temperate periods. It is on land-surfaces that the traces are left. "But with the exception of coal-seams, every general formation from top to bottom has been accumulated under water, and none but the under-clays *ever existed as a land-surface.*" All the stratified rocks of the globe are old sea-bottoms. Every striated rock, every ice-worn or ice-borne boulder, is in time disintegrated. "Throughout the strata to be eventually formed out of the destruction of the now-existing land-surfaces, evidence of ice-action will be as scarce as in Eocene or Miocene strata."<sup>1</sup> Not a trace will be preserved to convey an inkling of the past to the geologists of the distant future.

Ice or no ice, we have ample proof of a mild climate, even in Arctic regions, in these Miocene times. Fossil plants, in a good state of preservation, such as the tulip-tree, the plane, and the vine, have been found in the Miocene lignite of Greenland. In Spitzbergen, so far north as lat. 78° and 79°, oaks, poplars, birches, planes, walnuts, &c., have been discovered, besides something like one hundred species of flowering plants; while parrots, monkeys, rhinoceroses, and giraffes, together with tropical reptiles, were distributed over Southern, and many of them over Mid, Europe. Towards the close of the Miocene, a change in the flora indicates an increase of cold, and some corresponding modification in animal life gradually introduces a new era.

With the commencement of the Pliocene—which is divided into older and newer, or Pleistocene, as the last is sometimes called<sup>2</sup>—the land began to sink. The North Sea now touched the coasts of Norfolk and Suffolk; and the peculiar shells, which tell this tale, recur in the neighbourhood of Aberdeen. France, England, and Ireland continued to form part of one continent. With the new-

<sup>1</sup> *Ubi supra*, p. 271.

<sup>2</sup> "In 1839 I proposed the term newer Pliocene," &c. — Lyell, *Antiquity of Man*.

Pleistocene as an abbreviation for

comers are some members of our friends the dog tribe. The tapir, the rhinoceros, two kinds of apes, two species of gigantic mastodons, frequented the forests of Montpelier. The climate must still, therefore, in the early Pliocene, have been much warmer than at present. But vast physical changes were at hand. The sinking of the land in the eastern counties, just alluded to, is recorded in the only Pliocene deposits of importance in England, called the Norfolk and Suffolk tertiaries. The Norwich crag, the latest of the lot, proves that as the land continued to sink so fell the temperature. We begin with two or three Arctic shells, and end with nearly a score. *These deposits form the ground work of the glacial series.* But before those grim ages reached their climax, there was a respite for the living world in the mild interregnum during which the bottom of the sea was again laid dry; and the Cromer forest had time to grow, and swarm with elephants, rhinoceroses, sabre-toothed tigers, Irish elks, and other large mammals, whose bones the dredgers of the North Sea and Dogger Bank are constantly bringing to light. This upheaval may be said both to connect and divide the tertiary and post-tertiary periods; for a large proportion of the Pliocene species now disappear, and give place to such as still survive. "Instead of the one or two living species of the Pliocene age, there are many, and they preponderate greatly over the extinct, standing to them in the relation of fifty-five to twenty-two out of a total of seventy-seven."<sup>1</sup>

It is to this change that the end of the Pliocene owes its name of Pleistocene. With its introduction, or from the middle of the Pliocene age, enormous changes took place, both geographical and climatic.<sup>2</sup> Without going beyond the Norfolk or Suffolk tertiaries (though Sweden, Switzerland, and both sides of North America bear witness to the fact), some of these alterations are evident enough.

<sup>1</sup> Dawkins, *Early Man*, p. 95.

<sup>2</sup> "The conclusion is forced upon us that the so-called Glacial period, with its alternations of severe Arctic

climate and mild conditions, is one and the same with the Pleistocene period."—James Geikie, *Prehistoric Europe*, p. 544.

Above the bed of the Cromer forest, whose ancient stumps are occasionally exposed, are fluvio-marine sands and clays, containing both salt and fresh water shells; above this the boulder-clay,—the great witness of the ice age. In it are blocks of stone 6 or 8 feet in diameter, polished and scratched by the rough journey from their distant homes in Scandinavia. In places, this boulder-clay is 80 feet in thickness; and geologists agree that during its formation the cold reached the maximum of its intensity. This is the time, too, when the map of Great Britain has to be represented by a few isolated specks, the highest of the snow-covered peaks of our mountain-ranges. "Wales, like Scotland," says Professor Ramsay, "also became a cluster of islands, round which the drift was deposited, &c. In this stratified material, sea-shells were long ago found in Caernarvonshire by Mr. Trimmer on Moel Tryfaen, and by myself near Snowdon from 1100 to 1400 feet above the sea."<sup>1</sup> Drift, similar to that of Moel Tryfaen, "extends continuously to the height of 2300 feet." In Scotland it is found 2000 feet high; in the Killarney district, 2500 feet; in Derbyshire, 700. But Lyell reminds us that a subsidence of no more than 600 feet "would reduce the whole of the British Isles to an archipelago of very small islands," &c.<sup>2</sup> Few and far between, then, must have been the low and fog-capped hills above the frozen ocean.

After this iceberg period, but apparently before the land began to rise, a milder time set in. This is indicated by what is called the "Middle Drift," a stratum of sand and gravel which overlays the "boulder-till," the shells contained in it being those of temperate seas. Upon this again (still also while the depression continued) followed a return of severe cold, marked by a layer of more boulders, called the upper "boulder-clay." The final scene of the glacial drama was then at last enacted. Once more the land

<sup>1</sup> Ramsay, *Physical Geology and Geography of Great Britain*, p. 154.

<sup>2</sup> *Antiquity*, &c., p. 275.

uprose, now strewn with remains of northern and southern climes, buried in many places beneath deep strata of clay, stuffed with erratic blocks, like plums in a Sunday pudding. The climate gradually improved; the sea retreated to its old limits, and elephants, rhinoceroses, and hippopotamuses walked dry-footed into this country across the British Channel.

No account of the many changes which occurred during this eventful Pleistocene or newer Pliocene age is altogether satisfactory. No theory yet offered comfortably explains the strange association of the bones of such animals as lions and musk-oxen, African elephants and reindeer, tigers and ermines. Professor Dawkins tells us that the remains of these northern and southern groups "are mingled together in the caverns and river-deposits under conditions which prove them to have been contemporaries in the same region. In some of the caverns, such as that of Kirkdale, the hyæna preyed upon the reindeer at one time of the year, and the hippopotamus at another."<sup>1</sup> In connection with the discoveries in the Kirkdale Cave, which he alludes to in evidence of alternate cold and warm periods, Mr. Wallace shrewdly observes that the presence of bones in caverns must always be interpreted with reference to the probable means of transport. "Where it [the hippopotamus] is associated with other mammals in *caves* which are hyæna-dens, and not mere receptacles of water-carried remains, these always imply a mild climate; the elephant and rhinoceros found with it being species characteristic of temperate latitudes. But when it occurs in gravels or in water-borne cave-deposits, it is sometimes associated with the mammoth, the woolly rhinoceros, and the reindeer, animals which as certainly imply a cold or even Arctic climate."<sup>2</sup>

That the remains of these strange bed-fellows lie side by side, *as if* they had lived and died together, is matter of unimpeachable certainty. But knowing, as we do, the

<sup>1</sup> *Ubi supra*, p. 114.

<sup>2</sup> *Island Life*, p. 115.

habits of these creatures, it is unaccountable how such should be the case. This is no place to discuss a question of the kind: I will merely add that, personally, I incline to adopt Mr. Croll's view, "that these southern animals lived in our islands during the warm periods of the glacial epoch, while the northern animals lived during the cold periods."<sup>1</sup> The same opinion is held by Sir John Lubbock and Dr. James Geikie. My object is to convey to you some idea of the geographical disturbances which came to pass in the Pleistocene period. For whether or not we make out that man trod the earth before it sank beneath the glacial sea, we may be absolutely sure that he at all events dates from some part or other of these Pleistocene times. Some idea may be formed of what this implies, and of the changes he has lived through, when it is stated that he hunted the Irish elk and the horse when lions were as far north as Yorkshire and reindeer in the south of France, when the Arctic fox and the musk-sheep were in the Pyrenees, the spotted hyæna at Pickering, and the rhinoceros and hippopotamus at Charing Cross.

It need not be told how our western end of the continent was finally broken up. Lyell thinks before this was completed there were many oscillations of level. Enough has been said to facilitate our inquiry into the date, or relative epoch rather, of Man's advent. And this we may forthwith proceed to do.

We began our geological chart with an outline of the Eocene age. Have we any trace of man so far back as this? No, we have not. Nor does the supposition that he is not then to be looked for, rest solely on negative evidence. "To seek for highly specialised man in a fauna where no living genus of placental mammals was present would be an idle and hopeless quest."<sup>2</sup> This objection, if it be one, holds, in the opinion of Professor

<sup>1</sup> *Climate and Time*, p. 251.

<sup>2</sup> *Early Man in Britain*, p. 36.

Dawkins, also against man's presence in the Miocene period. Some of our living genera of placental mammals did belong to that distant age; but the forms have changed. "No living species of land mammal has been met with in the Miocene fauna."<sup>1</sup> The same writer inspects the views of Dr. Hamy and M. de Mortillet. These authorities decide in favour of Miocene man. The grounds of their belief are, flints resembling those of human manufacture found by the Abbé Bourgeois near Pontlevoy, and the fragment of a rib of an extinct kind of manatee, notched as if by the hands of man. The only doubt in both these cases is as to workmanship. "If they be artificial," says Professor Dawkins, "then I would suggest that they were made by one of the higher apes then living in France, rather than by man."

Flint flakes were found by M. Tardy in the Miocene beds of Aurillac, associated with the remains of a gigantic dinotherium. Speaking of "this interesting specimen," Sir John Lubbock says, "From the figure given there can be no reasonable doubt that it is of human workmanship."<sup>2</sup>

These are the only instances of positive evidence we at present can rely upon. With regard to Professor Dawkins' comment, it might, I think, be urged, that if the apes of the Miocene were so much more intelligent or more highly organised than any known living apes, man's presence amongst them would not be more anomalous than his presence amongst mammals all the species of which are extinct. It is a nice balance of probabilities, where one argument is as weighty as the other.

Mr. Wallace ventures to say, "He may even have lived in the Miocene or Eocene period, when not a single mammal was identical in form with any existing species." And again: "I believe . . . there is no *a priori* reason against our finding the remains of man or his works in the *tertiary* deposits."<sup>3</sup>

<sup>1</sup> *Early Man*, &c., p. 67.

<sup>2</sup> *Prehistoric Times*, p. 422.

<sup>3</sup> *On Natural Selection*, pp. 322, 323.

The presence, in the early Pliocene age, of species now living, removes in some measure the unlikelihood which hitherto obtained. We have, however, no conclusive evidence of man's appearance yet. Professor Dawkins gives two doubtful discoveries of Pliocene, *i.e.*, anti-Pleistocene man;—one of a human skull found in a railway cutting near Arezzo, about forty-eight feet from the surface; the other of a rib-bone apparently cut with a tool. The antiquity of both is suspicious on account of the things found with them. Near the skull was a flint implement “pronounced by Mr. Evans to belong to a well-known neolithic type;” near the cut bone, a fragment of pottery. Beside these two instances, Professor Capellini disinterred from the Pliocene of Poggiarone the bones of a whale bearing marks, as he and many others think, of human handiwork.

Throughout the inquiry there are two, and only two, tests which can be applied. One is the relative position of the strata; the other the nature of the remains themselves. We may have, as in the two cases quoted, first-rate geological evidence. But this may be completely upset (as it is here thought to be) by still better archaeological evidence. The strength of these two proofs may vary inversely with every instance. It is only where they perfectly accord that the inference is a safe one. Fortunately there is no lack of cases where the argument is complete. Flint instruments, as obviously the work of human hands as the most finished piece of cutlery ever turned out of Sheffield, and occasionally human bones, have been found in strata of indisputable antiquity;—found, moreover, in conjunction with the bones of animals which are not merely extinct, but which could only have got where they are when the world was in a very different state to what it now is. In some places, as at Brixham, for example, perfect flint implements have been found *underlying* the remains of such extinct beasts as the cave-bear. We know that these remains were there when clothed in

flesh, or at least "bound together by their natural ligaments;" for every bone of the animal's leg was in juxtaposition. "Even the patella, or detached bone of the knee-pan, was searched for, and not in vain."<sup>1</sup> The cave-bear belongs to the Pleistocene age, and had I space I could mention numerous instances, any one of which would abundantly suffice to show you that man was contemporary with many animals now extinct, which were peculiars of the Pleistocene age; also that, he inhabited Europe when, as already stated, tropical animals ranged as far north as the Midland Counties of England, and Arctic animals as far south as the Pyrenees. We may suspend our judgment concerning pre-Pleistocene or early Pliocene man, but here our doubts must end.

The PLEISTOCENE age. Well, but this is somewhat indefinite, you may say. If we are to begin with the Norwich crag, and the long subsidence and Arctic climate which it implies, if we are to pass from this to the reappearance of the North Sea bottom, to the Cromer forest with its elephants and lions, to the submergence again of all that scene of sylvan life, to the sinking of Wales and Scotland, to an age of frozen seas, to the slow formation of 80 feet of boulder sediment, to the milder climate of the Middle Drift, and then another upheaval, and then another invasion of African beasts,—if all these changes are to be scored under this one period, the term *Pleistocene* does not commit the palæontologist to any very rash assumption.

True, and in our present state of knowledge we must rest content with these wide limits. Still we are able to make some rational guesses. "The first appearance of man, when, together with the mammoth and woolly rhinoceros, or with the *Elephas antiquus*, *Rhinoceros hemiteachus*, and *Hippopotamus major*, he ranged freely from all parts of the continent into the British area, belongs probably to a late portion of this second continental period."<sup>2</sup> That is to say, after the great submergence, and after the laying

<sup>1</sup> Lyell, *Antiquity of Man*, p. 100.

<sup>2</sup> *Ibid.*, p. 283.

down of the boulder-clay, and consequently after the severest cold. We shall presently see, this opinion may err on the side of caution. Elsewhere Lyell says, "Neither need we despair of one day meeting with the signs of man's existence in the forest bed No. 3, or in the overlying strata, 3', on the ground of any uncongeniality in the climate, or incongruity in the state of the animate creation with the well-being of our species."<sup>1</sup> These figures refer to a diagram in which 3 is the Cromer forest, and 3' the fluvio-marine beds before described, all of which were sunk beneath a sea of ice, which in some regions was no less than 3000 feet thick. You will readily conceive what a difference it would make in the calculation were we to consider man as pre- instead of post-glacial. Lyell judges the former period to be twice as remote as the latter.

Professor Dawkins, who is one of the latest authorities on this head, seems to waver between pre-glacial and mid-glacial. But the evidence he adduces is, upon the whole, I take it, in favour of the more distant epoch. Speaking of a flint flake of the very oldest form found at Erith, he says, "Its discovery in two separate spots establishes the fact that man was living in the valley of the Lower Thames before the Arctic mammalia had taken full possession of the valley of the Thames, and before the big-nosed rhinoceros had become extinct."<sup>2</sup> Opposite Gravesend and at Crayford there is a stratum bearing the closest resemblance to the contorted drift on the Norfolk coast. At any rate, it "bears unmistakable signs of having been accumulated by the action of ice," &c.<sup>3</sup> If this "tract," as it is called, be the true "boulder-clay," then, what lies beneath it must be pre-glacial. "It seems to me very probable," says Professor Dawkins, "that 'the tract,' which undoubtedly has been accumulated under severe climatal conditions, may be the equivalent of the boulder-clays found on the northern side of the Lower Thames in Essex and Hertford-

<sup>1</sup> *Antiquity, &c.*, p. 22S.

<sup>2</sup> *Early Man in Britain*, p. 137.

<sup>3</sup> *Ibid.*, p. 139.

shire. In that case the remains of man and of the other animals buried in the fluviatile strata below may be considered pre-glacial." Mr. Skertchly has made discoveries in Norfolk and Suffolk which confirm this inference. "Mr. Skertchly's conclusions are accepted by Professor Ramsay and Mr. Whitaker, and put by the prudent caution of Mr. Evans 'to a suspense account.' I feel inclined to accept the evidence . . . in favour of man having lived in East Anglia before the upper boulder-clay had ceased to be deposited."<sup>1</sup> Finally, to quote Dr. James Geikie, "We are assured that palæolithic man lived in our area before the climax of the glacial period, when the northern *mer de glace* assumed its greatest development; but we do not know whether he appeared here before the advent of the first glacial epoch—that, namely, during which the Cromer boulder-clay was deposited. In France, however, implements have been detected in the sand deposits of St. Prest, which are variously assigned to late Pliocene and early Pliocene, but are probably of the later or *pre-glacial* age. . . . He [man] was certainly an occupant of our continent in early interglacial time, and he survived all the subsequent climatic and geographical changes of the ice age," &c.<sup>2</sup>

We come to this: that, all who are competent to form an opinion on the subject agree that man belongs to the Pleistocene age. The only doubt in the minds of geologists now is, whether man was pre-, mid-, or post-glacial.

Here we must end our digression. The time was when this inquiry would have borne most intimately upon theological creeds. Those who, like myself, remember the first appearance of the "Vestiges of Creation," will also remember the rancorous criticism which it called forth from geologists of so high a stamp even as Sedgwick. It is difficult for a younger generation to realise the great and rapid advance of opinion within the last thirty or forty

<sup>1</sup> Dawkins, *Early Man in Britain*, p. 169.

<sup>2</sup> *Prehistoric Europe*, p. 546.

years. True, the church population of English-speaking communities alone in the world is estimated at something like 70,000,000: but we may safely say, so far as regards this country, not one preacher in a score, and not one in a hundred of the educated part of the congregations, believe any longer in the myth of the six days' creation. The origin of our race will, notwithstanding, continue to afford interesting matter for speculation; and its scientific significance, as affecting the mutability of species, was that which induced me to discuss it here. At the close of the last letter I asked, how it is that altered conditions, even when sustained for immense periods, do not produce the changes which Darwinians ascribe to them. Most geologists will tell you: We have all but perfect assurance that the number of years during which man has inhabited the earth can only be expressed by at least six figures. We know with certainty that the climatic vicissitudes to which he has been subjected are as extreme as he could possibly endure. Yet the only evidence we possess goes to show that man was man, not an "anthropoid ape," at the remotest period of our acquaintance with him.

Unfortunately the actual bones of early man have rarely been discovered. It may be observed in passing, that this fact is not the least to be surprised at. In the first place, men who live entirely by hunting and fishing can never be numerous. Secondly, the Swiss Lake habitations, which are over seventy in four of the lakes only, have as yet yielded hardly any human bones. "Wangen, for instance, being, according to M. Lohle, supported on more than 50,000 piles. Yet, if we exclude a few bones of children, human remains have been obtained from these settlements in six cases only."<sup>1</sup> It scarcely needs be observed that, in point of antiquity, the lake-men are not to be named with the men of the drift age. The only skulls of early man yet discovered are those of the cave-dwellers. The cave-men are distinctly Pleistocene. In a cavern on

<sup>1</sup> Lubbock, *Prehistoric Times*, p. 357.

the left hand of the Meuse near Liége, the remains were exhumed of three human individuals in conjunction with the bones of a mammoth, a rhinoceros, and a reindeer; one of the skulls, which are held to be the oldest known, is that of an adult person. This famous Engis skull has been carefully described by Dr. Huxley. "It is," he tells us, "a fair average human skull, which might have belonged to a philosopher," &c.<sup>1</sup> So high does he consider its development, that he declares we need no longer seek for ancestral man in the newer tertiaries, but "in an epoch more distant from the age of the *Elephas primigenius* than that is from us."

To be sure, the geological position of the cave-men, and the great progress manifested in their workmanship, place a wide gap between them and the river-drift men. Still, although these seem to have been acquainted with flint tools of the simplest form only, these tools are the typical patterns of the latter stone ages, precisely as the neolithic hatchet was the model of the bronze celt. We have no reason to suppose that, could we find the heads that designed them, they would greatly differ from those of the cave-men, which, to all outward appearances, would befit an LL.D. or a university professor as well as a primitive savage.

It was stated at the beginning of this letter that, geologists have classed the earth's strata according to their fossil contents. The name Pleistocene indicates the presence of the most recent or existing forms. Accordingly Lyell remarks, "Throughout the whole of this succession of geographical changes [from the Pliocene to our own times], the flora and invertebrate fauna of Europe appear to have undergone no important revolution in their specific characters. . . . The mollusca, the insects, and even some of the mammalia, such as the European beaver and roebuck, were the same as those now co-existing with man." The absence of change, under the circumstance, presents an argument which is not altogether without force.

<sup>1</sup> *Man's Place in Nature*, p. 156.

<sup>2</sup> *Antiquity of Man*, p. 227.

## LETTER IX.

*(In continuation.)*

BROADLY stated, the Darwinian theory amounts to this : Artificial selection can obtain a given feather in a pigeon's plumage in three years ; therefore natural selection, starting whence you please—say from a sponge—has obtained man in  $\infty$  millions of years.

The dissenters from this theory (I do not mean the anti-evolutionists, but the anti-Darwinians) argue : Man's power of producing variation is limited ; therefore the power of natural selection is also limited. "Man," say they, "can produce no varieties differing from the parent stock, as one species differs from another."

In the essay before referred to, Professor Tait urges this objection with no ordinary skill. Alluding to the extent to which selection may be carried he writes : We may as well conclude "that because we observe a cannon-ball has traversed a mile in a minute, therefore in an hour it will be sixty miles off, and in the course of ages that it will reach the fixed stars." But as the missile slackens its velocity, so will variability exhaust its momentum. Can we get fleeter race-horses or larger gooseberries ? Apparently not. We might perhaps obtain a race of long-nosed men, but could never get noses a foot in length. The ambitious efforts of Frederick William I. failed to produce an army of giants. Do what we will, variation in *one direction* sooner or later reaches its limit.

The principle of reversion and that of inheritance, of

which reversion is but a phase, must always be in antagonism to variation, and hence indirectly to natural selection. If there is a proneness in every organism to transmit its own characters, in proportion to the strength of this, the tendency to vary in any given direction must be weak. Nor is it apparent how natural selection can ever mitigate this hostility of reversion. "It is peculiarly difficult," says Professor Tait, "to see how natural selection could reject individuals having a tendency to produce offspring reverting to an original stock. . . . Most individuals would be benefited by producing imperfect offspring competing with them at a disadvantage. Thus it would appear that natural selection, if it select anything, must select the most perfect individual, having a tendency to produce the fewest and least perfect competitors." The parallel between man and nature is misleading. Man seizes upon what is advantageous to himself, irrespective of consequences to the thing selected. Nature picks out such changes only as are profitable to the thing altered. Man preserves a species that breeds offspring which, in a state of nature, would not survive. Natural selection operates the other way.

Darwin sees no reason to doubt that, abnormally developed organs become constant through long-continued transmission; and "that the struggle between natural selection on the one hand, and the tendency to reversion and variability on the other hand, will in the course of time cease."<sup>1</sup> But even when the tendency to revert has died out, there is nothing to warrant the belief that variation will then start off again in the right direction. Mr. Wallace meets this objection by pointing out that natural selection is not concerned with indefinite and unlimited change; it merely undertakes to account for the variations preserved. This is true: yet, it does not quite reach the heart of the dispute.

Dr. Huxley takes exception, on the same score, to Mr.

<sup>1</sup> *Origin*, &c., p. 121.

Mivart's impeachment of indefinite variation. He too repudiates the term *indefinite*, and affirms that variation "is limited by the general character of the type to which the organism exhibiting the variation belongs. A whale does not tend to vary in the direction of producing feathers," &c.<sup>1</sup> No; but the parent form of both whale and bird does. If both are descended from amœbæ, then amœbæ must potentially contain feathers and whalebone. If we make our comparison between two points in the genetic scale far enough apart, the obnoxious term can hardly be objected to. It is in vain that the defenders of natural selection pretend that variation is neither indefinite nor fortuitous, as they do when it suits their purpose. Darwin's theory does practically demand a degree of variability which is indefinite. If a sea-squirt be the progenitor of both man and elephant—if, as Darwin holds, "animals are descended from at most only four or five progenitors, and plants from an equal or lesser number,"<sup>2</sup> by what term other than *indefinite* can we describe such a power of variation? When indefinite variation makes against the natural-selection theory, it is repudiated; but, as far as theology is concerned, natural-selection is reduced to insignificance if it only chooses what is forced upon it. This must be borne in mind when we treat of "efficiency," and have again to speak of indefinite variation.

Our third subject of inquiry is TIME. Is the supply equal to the demand? First let us see what are the exigencies of natural selection. To begin at the fountain-head, Darwin tells us that he who "does not admit how vast have been the past periods of time may at once close this volume."<sup>3</sup> By vast, Darwin means something only short of infinite. After contemplating the idea of thirteen miles and threequarters of the earth's strata, he observes, "The consideration of these various facts impresses the

<sup>1</sup> *Critiques and Addresses*, p. 298. <sup>2</sup> *Origin*, &c., p. 424. <sup>3</sup> *Ibid.*, p. 266.

mind almost in the same manner as does the vain endeavour to grapple with the idea of eternity." Throughout his writings, Darwin reiterates that, making every allowance for occasional leaps, the process of natural selection is incalculably slow.

"The organic history of the earth," says Professor Hæckel, "must not be calculated by thousands of years, but by palæontological or geological periods, each of which comprises many thousands of years, and perhaps millions, or even milliards of thousands of years."<sup>1</sup> Elsewhere the same writer assures us that, if necessary, we may assume "ten millions or ten thousand billions of years. Before us and behind us lies eternity."<sup>2</sup> In any case, the process goes on by inappreciable steps, and he signs a blank cheque for time which we may fill in at discretion.

Professor Ramsay, speaking of the slow processes of denudation and reconstruction, says they extend over periods "that seem to our finite minds almost to stretch into infinity."<sup>3</sup>

Referring to Darwin's estimate of 300,000 years for the erosion of the Weald of Kent, Professor Jukes admits that this may possibly be too great. He nevertheless adds, "It is just as likely that the time which actually elapsed since the commencement of the erosion till it was nearly as complete as it now is was really a hundred thousand times greater than this, or 30,000,000,000 years."<sup>4</sup> If we further reflect not only that these Wealden rocks, which took all this time to go, but, as Professor Ramsay says, that "ALL strata have been made from rocks that existed before; and therefore the oldest stratified rocks, whether metamorphosed or not, have a derivative origin,"—that the pulling down and building up succeed each other in cycles of endless repetition,—it will readily be understood that natural-selectionists, backed by geologists, have looked upon the supply of time as practically inexhaustible.

<sup>1</sup> *Hist. of Creation*, vol. ii. p. 337.

<sup>2</sup> *Ibid.*, vol. i. p. 129.

<sup>3</sup> *Physical Geology*, &c.

<sup>4</sup> *Manual of Geology*, p. 290.

These calculations greatly depend, you must observe, upon the soundness of the "uniformity" doctrine which Lyell took such pains to inculcate. The denudation of the Weald, for example, is ascribed to subaërial agencies such as now obtain—rain, snow, frost, and so on. In his "Principles" (chaps. v.–xiv.) our great geologist has fully discussed the whole question of the intensity of the aqueous and igneous forces in times past. He strives to prove that the changes in the earth's crust were brought about by no other than ordinary causes, such as continue to operate. The action of water is what it always has been, and there is no evidence to show that the plutonic rocks were more rapidly formed at any one period than at another, or that the volume of these rocks simultaneously in a state of fusion was greater at any one time than another.

Admitting that the old theory of convulsions and cataclysms is not, by itself, sufficient to explain all the facts; admitting that the doctrine of uniformity, so far as *the identity of the agencies* goes, is unequivocally true; we must yet inquire whether the forces at work are not only the same in kind, but the same in degree; also whether modern physics endorse the conclusions arrived at by Lyell and his school. To both these queries we obtain answers inconsistent with the above computations.

Against the doctrine of Uniformity, Professor Tait pits the Persistence of Force. "To say that things must or can always have gone on at the present rate, is a sheer absurdity, exactly equivalent to saying that a boiler-fire once lighted will keep a steam-engine going for ever at a constant rate." There must be "a continual dissipation of energy, by which the available power to produce change in any finite quantity of matter diminishes at every change of the distribution of energy."<sup>1</sup> Calculations on the rate of cooling have been applied both to the sun and

<sup>1</sup> *North British Review*, vol. vii. p. 298. See also an article by Mr. Sollas, *Geological Magazine*, 1877.

to the earth. With regard to the latter, roughly speaking, the known quantities which afford data for computation are, the present temperature of the earth's surface, the temperature and conductivity of melted rock, and hence the probable rate at which the earth, when in a state of fusion, would part with its heat. Owing to the uncertainty attending this last quantity, no very satisfactory result is attainable; but the sun supplies materials for much greater accuracy.

It was casually observed (we shall again refer to the subject) that the "nebular hypothesis," known also as the "condensation" theory, is the received explanation of a great part of the solar heat. Part, because the mere condensation of nebulous matter, filling the entire space occupied by our solar system even, would not give the requisite amount of heat, and must therefore be supplemented by some other principle. What this may be we have no means of knowing; but as the required residue may be accounted for by the dynamical theory, this upon the whole commends itself as the most acceptable. Whatever principle we adopt, we are driven to conclude that the only possible source of the sun's heat is gravitation in some form or other. Combustion is out of the question. "No earthly substance with which we are acquainted . . . would be at all competent to maintain the sun's combustion."<sup>1</sup> Were the entire sun composed of coal, the heat now given out, which is pretty accurately known, would not last five thousand years.<sup>2</sup>

It has been ascertained what the energy of a pound of matter would be were it to fall unimpeded into the sun from infinite space. Dr. Croll, to whose interesting work on "Climate and Time" we shall constantly refer, illus-

<sup>1</sup> Tyndall, *Heat as a Mode of Motion*, p. 477.

<sup>2</sup> The quantity of heat incident per second on a square foot directly exposed to the sun's rays was measured by Sir John Herschel at the Cape of Good Hope, and by M.

Pouillet at Paris. The estimates, independently worked out, agree in a remarkable manner; and furnish the data for obtaining the entire heat emitted by the sun in a given time.

trates the amount by the statement that, it " would project the *Warrior*, fully equipped with guns, stores, and ammunition, over the top of Ben Nevis." He goes on to say, " Prodigious as is the energy of a single pound of matter falling into the sun, nevertheless a range of mountains, consisting of 176 cubic miles of solid rock, falling into the sun, would maintain this heat for only a single second. A mass equal to that of the earth would maintain the heat for only ninety-three years, and a mass equal to that of the sun itself falling into the sun would afford but 33,000,000 years' heat."<sup>1</sup>

Professor Helmholtz has calculated that the condensation of a nebulous mass, extending to the extreme limits of our solar system, would give 20,237,500 years of heat at the present rate of emission. Of course, neither of these amounts would approximately serve the requirements of geological history. It must therefore be assumed that the nebulous matter contained an enormous amount of heat before condensation commenced. This is quite in accordance with the fact of its nebulosity, which indeed could not otherwise be explained. In order to obtain this previous heat, we have only to suppose the concussion of two bodies, " each half the mass of the sun, moving directly towards each other with a velocity of 476 miles in a second." This—which is the dynamical theory just mentioned—would instantaneously generate the heat now being emitted for 50,000,000 years. The two sums added together give 72,237,500 years as the total amount produced by gravitation.

Inconceivably vast as this length of time is, it still falls immeasurably short of that which geologists, as we have seen, demand for the deposition of the earth's strata; nor is it less inadequate for the purposes of natural selection, unless our notions of that process undergo considerable modulation. Yet, in spite of the discrepancy, it will not be denied that the methods of the physicists generally

<sup>1</sup> *Climate and Time*, p. 347.

are at least as valid as those of the geologists alone. And if we raise the figures here obtained to 100,000,000, we have some confirmation of their approximate value in the fact that this is about the number of years which Sir William Thomson's calculations on the cooling of heated masses, when applied to the earth, give as the age of our planet. The mean of the two sums is about 85,000,000 years; but from this something has to be deducted for the formation of a crust capable of supporting life.

Besides these two modes of measuring geological time, there are others, upon which perhaps even more reliance may be placed. It was observed that the reckonings of geologists and natural selectionists depend on the uniformity of the forces which have always been in activity. It is not necessary again to remind you that, if the doctrine of conservation of energy be true, the doctrine of uniformity must be false. The age of the sun is limited; and, whatever that limit may be, it must necessarily involve the age of the earth: if the sun is but one hundred million years old, the earth cannot be two. Further, if there has been any diminution in the sun's energy, all the subaërial agencies of which the sun is parent, such as rains, snows, glaciation, storms, &c., all these will proportionably have diminished in violence. But setting aside the hypothesis of slackened energy in the sun; granting, for argument's sake, that volcanic action is unchanged, and that denudation, and consequently deposition, have always gone on at the present rate, are we then warranted in talking of the organic history of the earth as having lasted for "ten thousand billions of years," or even for the 500,000,000 of Lyell and Darwin?

What is the rate of present denudation? If we get at that, we shall know the rate of deposition. And if we get at this, and also at the thickness of the strata, we may have some idea how long the strata took both to go and to come. "In order to determine the present rate of subaërial denudation, we have only to ascertain the quantity

of sediment annually carried down by the river systems." <sup>1</sup> Selecting seven rivers in different parts of the world, such as the Danube, the Mississippi, the Ganges, &c., Professor Archibald Geikie found that the average rate of present erosion would remove one foot from the surface drained in 3378 years. Dr. Croll, wishing to be on the safe side, allows 6000 years to the removal of a foot, and taking Humboldt's estimate of the mean altitude of all the land in the world at 1000 feet, he says, "The whole would be carried down into the ocean in 6,000,000 of years, if no elevation of the land took place." If we accept Professor A. Geikie's figures, Europe would be levelled to the sea in about 2,000,000 years, and North America in little more than 3,000,000.

One might object to these calculations on the score that most of the sediment would be from the washing of soft surfaces, and not from the disintegration of hard rock. Dr. Croll is prepared for this, and informs us that the rate at which rivers carry sediment depends on "the velocity with which it moves off the face of the country." Unless this were true,—unless the sediment were removed more slowly than it was formed by disintegration, there could be no such thing as surface soil. That the rate of waste can be fairly gathered from a large average of rivers may be assumed from the fact that the Mississippi alone "drains a country equal to more than half the continent of Europe, extends through twenty degrees of latitude, and therefore through regions enjoying a great variety of climate, and some of its tributaries descend from mountains of great height." <sup>2</sup>

Splitting the difference between Dr. Croll and Professor Geikie, we get about four and a half millions of years as the time required for the denudation of a thousand feet. But during the glacial epoch this rate would be enormously accelerated by the grinding of the ice. If these epochs have been constantly repeated, as Dr. Croll believes,

<sup>1</sup> Croll, *ubi supra*, p. 329.

<sup>2</sup> Lyell, *Elements of Geology*.

then the denudation must have gone on a great deal faster than anything here supposed.

The thickness of the earth's crust, which is the next thing to be considered, will equally prove, I think, that the rate at which the sedimentary strata have been formed is far more rapid than has hitherto been imagined; consequently that the time they indicate is enormously within that claimed for their formation.

The maximum thickness of the stratified rocks, as measured by Professor Ramsay in different parts of Great Britain, is given at 72,584 feet. Professor Haughton estimates the maximum thickness of the strata of the whole world at 177,200 feet. These figures, however, do not tell us anything of the old deposits which have been washed away. The aggregate of these must have surpassed that of the existing sedimentary rocks; and Dr. Croll must be under the mark when he supposes that the past and present strata together would give a mean thickness equal to the present maximum. Just reflect what this represents in point of time.

If there were as much land as sea, and if what came off the land were evenly spread over the whole sea-bottom, then one foot in 6000 years (if the rate of denudation) would also be the rate of deposition. But there is rather more than twice as much sea as land;<sup>1</sup> so that one foot off the land would give less than half a foot, viz., five inches only, of sediment. Instead, therefore, of getting a foot of sediment in 6000 years, we want more than twice as long, or 14,400 years to the foot. Now, if 72,000 feet be the mean thickness of all past and present strata, we must multiply the 72,000 by the 14,400. This gives us 1,036,800,000 years for the formation of the stratified rocks. If we use Professor Haughton's figures, we get 2,551,680,000 as the age of the entire sedimentary strata! It is quite certain either the geologists or their brother physicists must be wrong. But as the rate of denudation here employed is the most

<sup>1</sup> Dr. Croll's figures are 576 to 1390.

moderate which can be adopted consistently with Professor A. Geikie's river experiments, the blame appears to rest with the geologist for over-estimating the thickness of the strata.

Professor Dana has striven to obtain measurements by means of the different rates of increment for different kinds of matter. For the growth of limestone he allows .125 inch per year, and five to ten times as much, or from .62 to 1.25 inch in a year.<sup>1</sup> But when we come to think how unevenly sediment is deposited, and that "we shall find in some places a foot of sediment laid down in a year, while in other places a foot may not be deposited in a thousand years,"<sup>2</sup> it will be seen how misleading calculations must be when either extreme supplies the data. It is evident, the matter washed down by the rivers would subside near the mouths of the rivers. And the soundings of the *Challenger* showed that these deposits did not extend to more than 100 to 150 miles from the shore. If, then, the length of all the coast-lines be multiplied by these figures, the proportion which the total bears to the whole of the land is, according to Dr. Croll, about as 1 to 5. So that "one foot of rock denuded from the surface of the land deposited on this belt would make a stratum of five feet in thickness." If, however, these five feet were spread over the entire ocean-bed, they would be reduced to five inches. How doubly deceptive, then, would the five feet be if assumed as the measure of surface removed and as a gauge of the mean thickness of the earth's strata! To serve these purposes, they would first have to be divided by five and afterwards by twelve. Yet this is the way we must treat the products reached by multiplying the rate of denudation into extreme measurements of thickness. Thus, too, on the same grounds, must we deal with the above estimates of geological time.

<sup>1</sup> *Manual of Geology*, p. 386.

<sup>2</sup> Croll, *ubi supra*, p. 360.

## LETTER X.

ONE mode remains by which past time may be fathomed with some probability of correct results. This is by ascertaining the date of the last glacial epoch. It is upon this enigma that the labours of Dr. Croll have thrown much light. I propose to lay before you some of the conclusions he has arrived at, together with such criticisms upon them as will enable you to form an impartial opinion of your own.

The possible occasion of the extraordinary changes of climate during the glacial and interglacial periods has long been the subject of scientific inquiry and speculation. I shall not trouble you with such hypothetical causes as the obliquity of the ecliptic, or possible changes in the earth's axis of rotation; but shall restrict myself to those agencies which are undeniably capable of producing the results in question, and which, moreover, are supported by the strongest arguments.

Lyell's theory was, that these great climatic variations were owing to changes in the earth's geography. If the land were chiefly equatorial, the climate of the Arctic regions would be mild. If the land were chiefly polar, the same regions would be proportionably severe. He admitted that the greatest accumulation of snow would always take place at that pole where midwinter chanced to occur in aphelion. But this would only happen under abnormal geographical conditions, which he believed to be "by far the most influential in the production of great cold."<sup>1</sup> Dr. Croll's theory is, that the changes are referable

<sup>1</sup> *Principles*, chap. xiii.

ultimately to astronomical causes. He ascribes little or no influence to geographical circumstances.

In the broad principle that the temperature of the earth and its atmosphere depends on our relations with the sun, there is nothing new. Astronomers have long entertained vague notions that in some way or other the glacial epochs were probably connected with the eccentricity of the earth's orbit; yet nothing really could be made of it. The highest authorities, with John Herschel, Arago, and Humboldt at their head, decided that were the eccentricity far greater than it can be, the effect of this alone could not produce glaciation. But might not some factor have escaped them? To this Dr. Croll makes the following reply: "Although an increase of eccentricity could have no direct tendency to lower the temperature and cover our country with ice, yet it might bring into operation physical agents which would produce this effect. . . . By far the most important of all these agencies, and the one which mainly brought about the glacial epoch, is the deflection of the ocean currents."

This deflection of the ocean currents is precisely the agency which Lyell supposes to be brought into play by different distributions of the land. The only matter which concerns us is time. If Dr. Croll is in the right, or even partially in the right, we get from him very definite ideas as to time,—much more definite than we can hope to arrive at through geology. Let us attend to the astronomical causes first.

At present, as you are doubtless aware, our winter occurs when the earth is in that part of its orbit—called the perihelion—which is nearest to the sun; and that summer occurs in aphelion, or at the most distant point of our orbit from the sun. The orbit being but slightly elliptical, the difference between the earth's nearest and farthest distances from the sun is in itself not sufficient to affect the climate. But when the orbit becomes much more elliptical, and the eccentricity reaches its utmost limit, this difference, which

is now 3,071,040 miles, is increased by 5,570,830 miles; so that instead of being, as at present, 92,935,520 miles off in aphelion, the earth would then be 98,506,350 from the sun. Under the same conditions of extreme eccentricity, the distance in perihelion, instead of being, as at present, 89,864,480 miles from the sun, would be reduced to 84,293,650. Now, between the greatest and the least of these distances the difference is no less than 14,212,700 miles. This must make considerable difference in the heat respectively received from the sun when the earth is in perihelion and aphelion. "If winter, under these circumstances, should happen when the earth is in the perihelion of its orbit, the earth would then be 14,212,700 miles nearer the sun in winter than in summer. In this case the difference between winter and summer in the latitude of this country would be almost annihilated. But as the winter in the one hemisphere corresponds with the summer in the other, it follows that while the one hemisphere would be enduring the greatest extremes of summer heat and winter cold, the other would be enjoying a perpetual summer." <sup>1</sup>

Nor is this the only consequence of the change here supposed. When the orbit reached its utmost limit of eccentricity, and the earth was in aphelion, the winter occurring there would be forty-four days longer than it is now; for instead of being, as with us, eight days shorter, winter would then be thirty-six days longer, than summer. Such a state of things would produce terrible results. Rain would be turned into snow. The long winter would permit the snow to accumulate; and when the short summer came, its temperature would be so lowered by radiation, that instead of melting the snow, it would raise a vapour only to be condensed into impenetrable fog. This effect would go on augmenting. The sun's rays would be more and more shut out, and as long as the eccentricity lasted, the severer the glaciation would become.

<sup>1</sup> *Climate and Time*, chap. iv.

These great changes of climate, as already stated, would not be brought about solely by the immediate influence of the sun's rays, but (and this is the hypothesis advocated by Dr. Croll) the ocean-currents would be so altered that this would induce the change. A few instances may be given to illustrate the heating powers of the ocean streams. Every one knows that the same latitudes on the east coast of America and west coast of Europe experience very different temperatures; that Labrador, for example, which is ice-bound nearly all the year, is in the same latitude as Scotland; that Lisbon is in a line with Washington, where the Potomac freezes in a single night; that Quebec is more than two degrees south of the Channel Isles, where the mean annual temperature is  $51^{\circ}$ . These differences are mainly due to the warm Gulf stream and the cold Labrador current. The Gulf stream is poured forth from the Gulf of Mexico, where it has a warmth of about  $85^{\circ}$  F.; and some of this tropical heat is retained even to the shores of Norway, where, up to  $70^{\circ}$  of latitude, it keeps the harbours open, while the Baltic, which it misses, is frozen over. If the Gulf stream were stopped, the temperature of England would fall to that of North Greenland, and the condition of these islands would probably be reduced to that of the glacial epoch.

Now, the stoppage here supposed would, Dr. Croll contends, be effected by extreme eccentricity of the orbit. The great alteration in the temperature of the opposite hemispheres, caused by eccentricity, would produce corresponding changes in the constant winds, and these in turn would change the currents. The heat at the equator rarifies the air, and the cold air from the poles rushes in to restore the equilibrium. Intensify the cold at the northern hemisphere and reduce it at the other, and the violence of the winds from the north would increase, while those from the south would diminish. "The effect of the northern trades blowing across the equator to a great distance, will be to impel the warm water of the tropics over into

the Southern Ocean.”<sup>1</sup> The immense power exercised by wind upon water is well known to those who have witnessed its aggravation of a flood-tide; and we have only to suppose the wind to blow continuously from one quarter to understand how prodigious would be its accumulated effects.

I must tell you that much of the strength of Mr. Croll's argument depends on the oceanic circulation being caused by the impulse of the winds. There are two other theories which ascribe the motion of the water to the difference of its specific gravity; but as the wind theory harmonises with all the facts, while these others do not seem to do so, we may say that Dr. Croll, so far as regards his current theory, remains master of the situation.

The upshot of these remarks is: “If the glacial epoch resulted from a high condition of eccentricity, we have not only a means of determining the positive date of that epoch, but we have also a means of determining geological time in absolute measure.”<sup>2</sup> How this is achieved it will not take us long to understand.

The great French astronomer, M. Leverrier, ascertained what the superior limit of the eccentricity of the earth's orbit would ever be, and supplied formulæ for computing the extent of the eccentricity for any period past or future. With these formulæ Dr. Croll has worked out the variations in the orbit for 3,000,000 years back and 1,000,000 years to come, at periods 50,000 years apart. From him we learn that about 2,550,000 years ago the eccentricity was nearly at its present limit, which, happily for us, makes our summer eight days longer than our winter. In about 50,000 years after this it attained almost the superior limit; another 50,000 and it again fell back. “We then pass onwards for upwards of a million and a half years, and we come to the second great period. It consists of three maxima separated by two minima. The first maximum occurred at 950,000 years ago, the second or middle one at

<sup>1</sup> *Climate and Time*, p. 70.

<sup>2</sup> *Ibid.*, p. 19.

850,000 years ago, and the third and last at 750,000 years ago—the whole extending over a period of nearly 300,000 years.”<sup>1</sup> For those who are interested in the future, we may add, that 800,000 years hence the first of three maxima eccentricities will occur, each separated by 100,000 years. We, however, must attend to the past periods; for the glacial epoch must be referred either to the above “second great period,” which began nearly a million years back, and lasted, with intervals, till about 730,000 years ago, or else we must date it from the last great period of eccentricities, beginning about 240,000 years since, and extending down to about 80,000 years ago.

All this on the supposition that the glacial epoch is due to a high state of orbital eccentricity. What is to be said against it? A great deal has been said against it by competent judges, such as Professor Dana, Mr. Searles Wood, and others, who go even beyond Lyell, and ascribe the changes almost exclusively to elevation of land in the higher latitudes. The whole subject has been carefully weighed by Mr. Wallace in his “Island Life,” where he fairly adjudicates, I think, between Lyell and Dr. Croll. His own belief is that *extreme* glaciation depends in great measure on geographical or physical combinations. Yet he decidedly thinks extreme eccentricity is an essential adjunct. He fully agrees with Dr. Croll about “the capacity of snow and ice for storing up cold, and its singular power (when in large masses) of preserving itself unmelted under a hot sun, by itself causing the interposition of a protective covering of cloud and vapour.” But why should the snow and ice accumulate, in the first instance, if there were no land at the poles to retain it? If all the land were in the region of the equator, “the constant interchange of water by means of currents between the polar and tropical regions would most likely prevent ice from forming in the sea.” On the other hand, were all

<sup>1</sup> Page 313.

the land gathered at the poles, this would condense the vapour from the warm latitudes and convert it into snow. "There would be little or no check to this accumulation of ice, because, owing to the quantity of land around the polar areas, warm oceanic currents could not reach them, while the warm winds would necessarily bring so much moisture that they would help on instead of checking the process of ice accumulation."<sup>1</sup> Again, although cold can be stored up, this is not the case with heat, for it is continually being carried away by air and water; so that Dr. Croll's theory, by itself, would not explain the warm climates which we know to have existed within the Arctic circle.

The negative evidence against astronomical causes, by themselves, must also count for something. According to Dr. Croll, each period of extreme eccentricity was accompanied by a glacial epoch. No geologist questions the evidence of ice-action in the remotest ages of the world's history. This evidence is hardly doubtful in Permian strata, and still less so in those of the Devonian period. But, as Mr. Searles Wood has indicated, the Eocene formation, so complete in England, and so well known by railway-cuttings, &c., shows no trace whatever (as it ought to do) of "the intercalation of a glacial period." Mr. Wallace adds, "It must be remembered that the imperfection of the geological record will not help us here, because the series of tertiary deposits is unusually complete, and we must suppose some destructive agency to have selected all the intercalated glacial beds, and to have so completely made away with them that not a fragment remains, while preserving all or almost all the *interglacial* beds."<sup>2</sup>

Mr. Wallace quotes Professor Nordenskjöld on the same head. This eminent authority assures us that, as "the flora and fauna of the polar lands show no sign of a glacial era having existed in those parts before the termination of

<sup>1</sup> *Island Life*, p. 144.

<sup>2</sup> Page 175.

the Miocene period, we are fully justified in rejecting on evidence of actual observation the hypotheses, founded on purely theoretical speculations, which assume the many times repeated alternation of warm and glacial climates between the present time and the earliest geological ages.”<sup>1</sup>

In spite of these objections, Lyell, as we have seen, makes no question of the efficacy of high eccentricity under “favourable circumstances;” and Mr. Wallace goes so far as to say, “There seems, therefore, to be little doubt that in increased eccentricity we have found one of the chief exciting causes of the glacial epoch, and that we are therefore able to fix its date with a considerable probability of being correct.”<sup>2</sup>

Which of the above-mentioned dates, then, are we to choose as most probably correct? Lyell, strongly prepossessed as he was in favour of his doctrine of uniformity and extremely slow changes, as indicated by geological phenomena, dated the great ice age from the remoter series of eccentricities. Dr. Croll tells us, he also at first inclined to the same view, because of the greater length and greater severity of that period. Upon mature reflection, however, he decided in favour of the latter age. He points out that, the thickness of a deposit cannot be employed as a measure of time. He also shows that, if we accept Lyell’s method of estimating time by the rate of change in the species of mollusca, and refer the glacial epoch to the more distant date, we must adopt a scale of measurement quite incompatible with the calculations of modern physicists. Thus, if only 5 per cent. of the shells existing at the commencement of the glacial epoch have since died out, and if we date this epoch at near a million years ago, then, as Lyell concludes, we must date the Cambrian epoch at 240,000,000 years ago. And as we must allow at least as much again before the Cambrian, this demands a total of near 500,000,000 years; which, as

<sup>1</sup> *Geological Magazine*, 1875.

<sup>2</sup> *Ubi supra*, p. 156.

we have seen, is more than can be granted. Beside these, there are other strong reasons for assigning the glacial age to the period of eccentricity, which ended about 80,000 years ago; but we cannot afford space to examine them.

To satisfy you of the importance of this time-question, I must ask you to turn to the passage quoted (vol. i. p. 301) from Dr. Huxley's "Lay Sermons," and to note this conclusion which follows it: "That the Palæozoic, Mesozoic, and Cainozoic fauna and flora, taken together, bear somewhat the same proportion to the whole series of living beings which have occupied this globe as the existing fauna and flora do to them." Indeed, the comparative perfection of such animals as the eozoon in the lowest of all fossil-bearing beds, and the advanced state of life in the Silurian period, necessitate the belief that, "the oldest fossiliferous strata known to us may be the last of a long series of antecedent formations which once contained organic remains."<sup>1</sup> If, as Darwin thinks, variation induces variation; if also the simplest forms are the most persistent (as observation proves to be the case), then the earliest ages of life would be those of slowest evolution; and Darwin is justified in the opinion that "if the theory [natural selection] be true, it is indisputable that before the lowest Cambrian stratum was deposited, long periods elapsed, as long as, or probably far longer than, the whole interval from the Cambrian age to the present day, and that during these vast periods the world swarmed with living creatures."<sup>2</sup> Precisely the same opinion is held by Professor Ramsay, who, speaking of the Cambrian rocks, says: "All the phenomena connected with this old period seem to my mind to be quite of a recent description." Finally, to give you an idea of the Silurian life, upon which these opinions are based, Mr. Mivart writes, "Not only were the vertebrate, molluscous, and anthropoid types distinctly differentiated, but highly developed forms had been produced in each of these sub-kingdoms. Thus

<sup>1</sup> Lyell, *Antiquity of Man*, p. 470.

<sup>2</sup> *Origin*, &c., p. 286.

in the vertebrate there were fishes not belonging to the lowest, but to the very highest groups which are known to have ever been developed.”<sup>1</sup>

What are we to make of this? Is natural selection, *as taught by Darwin*, consistent with the length of time which physicists declare to be available? If the prodigious amount of variation which has taken place since the commencement of life upon the earth, has been brought about by the gradual, insignificant, minute modifications which natural selection supposes,—are 100,000,000 years—the full amount which physical science, with its various tests, is prepared to concede—enough for the purpose? If it took the whole of the tertiary period to merge the four toes of the orhippus in the one toe of the horse, will the Triassic period suffice, *by the same process*, to turn a lizard into an ostrich? Yet nothing short of this is what natural-selectionists call upon our credulity to admit.

Assuredly, this time-objection cannot be lightly thrust aside. Darwin candidly confesses that it “is probably one of the gravest yet advanced.”<sup>2</sup> But he seems to doubt the correctness of the physical computations. Dr. Huxley declines, as a natural-selectionist, to concern himself with the matter.<sup>3</sup> He says in effect: It is not my business to determine how long it takes to turn scales into feathers. Whether it took a million or a billion of years is no affair of mine. The geologist must settle that. I take my time from him. This is all very well. But if Darwin be right, if there is virtue in the foregoing argument, Dr. Huxley’s way out of the difficulty is little better than the old—*tant pis pour les faits*—reply. Will the hypothesis accommodate itself to the facts? That’s the question. Dr. Huxley says, “I desire to be informed what is the foundation for the statement that evolution does require so great a time?” None whatever that *evolution* requires it. But the whole doctrine of natural selection, in its

<sup>1</sup> *Genesis of Species*, p. 158.

<sup>2</sup> *Origin*, &c., p. 409.

<sup>3</sup> See *American Addresses*, p. 92.

integrity, is the foundation for the statement as regards itself. If it be not so,—if natural selection can be so pared and trimmed as to suit the comparatively limited supply of time at command, then (as it appears to me) it dwindles into a very harmless subordinate principle;—a sort of byelaw of *évolution*, about which (whatever the interest to biology) it is quite unnecessary for the theologian to make a fuss. For we are then reduced to jumps and leaps; which (as Professor Tait observes) may, for all we know about them, as well be called acts of creation as by any other name.

Mr. Wallace allows, the foregoing estimates “show that the enormous periods of hundreds of millions of years, which have sometimes been indicated by geologists, are neither necessary nor warranted by the facts at our command.”<sup>1</sup> He argues that, we get an erroneous idea of the permanence and stability of specific forms by taking our scale of measurement from an age of such exceptional stability as our own. The present long period of normal orbits is, he says, no guide to the rate at which change must have occurred during ages of more frequent alternation. “I have further shown,” he writes, “that in the continued mutations of climate produced by high eccentricity and opposite phases of precession, even though these did not lead to glacial epochs, we have a motive power well calculated to produce far more rapid organic changes than have hitherto been thought possible.”

This, if it were borne out by the facts, would be an admissible answer so long as we contemplate natural selection simply as “a process of accommodation to varying conditions.” But, in the first place, I would ask: *Were the changes during the extraordinary vicissitudes the earth has witnessed since the beginning of the tertiary epoch at all in proportion to what we ought to expect?* If you take the trouble to recall some of the passages cited from Lyell and others, you will find nothing to support

<sup>1</sup> *Island Life*, p. 228.

the notion that, variation "was more active in those remarkably versatile ages than during others which preceded them."<sup>1</sup> In the next place, as just remarked, if evolution works by fits and starts, and new species appear with new physical conditions, the appearance of those new species must be explained, if at all, by the laws of variation (of which we know nothing), and not by natural selection.

Dr. Huxley's teaching can hardly escape this interpretation, his eloquent pleadings for natural selection notwithstanding. He thinks Darwin has needlessly hampered himself with his favourite aphorism, "*Natura non facit saltum.*" "We believe, as we have said above, that Nature does make jumps now and then, and a recognition of the fact is of no small importance in disposing of many minor objections to the doctrine of transmutation."<sup>2</sup> Substitute "natural selection" for "transmutation," and this avowal would dispose of the objections by nearly disposing of the doctrine. On this head we shall have more to say presently, for it brings us to the question of Efficiency, with which we shall close the discussion.

<sup>1</sup> Referring to the absence of change, as exemplified by the Egyptian mummies, Darwin writes, "The many animals which have remained unchanged since the commencement of the glacial period would have

been an incomparably stronger case, for these have been exposed to great changes of climate and have migrated over great distances," &c.—*Origin*, &c., p. 169.

<sup>2</sup> *Lay Sermons*, p. 297.

## LETTER XI.

EVERY educated person in these days thinks he perfectly comprehends Darwinism. Nevertheless there never was a doctrine so well known yet so often ill understood. The subject of this letter is the EFFICIENCY of natural selection. I have addressed myself to this, because it is the one consideration interwoven with the whole discussion before us that is essential to the purport of these letters. No one will dispute the relevancy of examining how far Darwin's theory justifies the pæans of atheistic *doctrinaires*, or the alarms of timid teleologists. But before reviewing the many difficulties which, for convenience' sake, will be arrayed under the head of Efficiency, it becomes our respect for Darwin to state that, the term "efficiency" is altogether inapplicable to natural selection. It is just the opposite insinuation which has made such a stumbling-block of the doctrine. Indeed many servants of the prophet assert point-blank that, Darwin's theory of descent annihilates the theory of a Creator:—not meaning by this latter the mere miraculous intervention of a God, but of the existence of a God.<sup>1</sup> Nothing can be clearer than the utterances of Darwin himself upon this topic. "Some," says he, "have even imagined that natural selection induces variability, whereas it

<sup>1</sup> "The cell," says Professor Hæckel in his letter to the German Association, 1877, "consists of matter called protoplasm, composed chiefly of carbon, with an admixture of hydrogen, oxygen, nitrogen, and sulphur. These component parts, properly united, produce the body and soul of the animated world, and, suitably nursed, become man. With this single argument the mystery of the universe is explained, the Divinity annulled, and a new era of infinite knowledge ushered in."

implies only the preservation of such variations as arise and are beneficial to the being under its conditions of life. . . . It has been said that I speak of natural selection as an active power or Deity ; but who objects to an author speaking of the attraction of gravity as ruling the movement of the planets?"<sup>1</sup> "Natural selection can do nothing until favourable individual differences or variations occur." Occasionally the meaning of Darwin's words do admit of perversion. But there ought to be none when he tells us, "I have spoken of selection as the paramount power, yet its action absolutely depends on what we in our ignorance call spontaneous or accidental variability."<sup>3</sup>

Possibly, had Mr. Spencer's term, "survival of the fittest," been adopted, instead of that generally used, it would have been more suggestive of a law than of an "active power," and consequently less prolific of confusion. As to the efficiency, then, of natural selection, its sufficiency would be the properer object of inquiry. To what extent does the principle explain the origin of species? This naturally leads into the more general inquiry as to the efficiency of evolution ; in other words, to the question whether evolution exhibits or excludes design.

The minor query resolves itself into the two problems of divergence and transmission. Each will be separately dealt with. Although a host of difficulties here present themselves, they are so miscellaneous, it matters little in what order we take them. Prominent amongst the number are: those attending the production of organs of extreme complication ; similarities of structure not to be ascribed to inheritance from a common progenitor ; instinct ; mimicry ; the uselessness of transitional modifications ; the anticipation of function by structure originally unserviceable ; man's moral and mental nature ; and, lastly, the odds against selection, owing to the numerical inferiority of the fittest.

<sup>1</sup> *Origin*, &c., p. 63.

<sup>2</sup> *Ibid.*, p. 137.

<sup>3</sup> *Animals and Plants*, vol. ii. p. 236.

Of all the organs of the body, the one which first strikes us as most perfect and most complicated is the eye. If perfection alone were taken into account, any one possessed of the most elementary knowledge of anatomy would be puzzled to say what organ is most complete where each serves its special end so marvellously. He would think of the organs producing their special secretions, which the chemist vainly seeks to imitate; or of the heart, with its several chambers and admirably constructed valves, doing their eighty or ninety years of work with sleepless industry; or of the exquisitely fitting bones, with their hinges, their balls and sockets, their pivots, ligaments, lubricating fluids, &c.; or of the mechanical arrangement of the muscles, such as the bandaging of the tendons at wrist and instep, and the passage of muscles through loops to alter the direction of the pull. He might think of the wonderful apparatus of the ear; or of the still more wonderful apparatus of the larynx, to which man may indirectly owe his larger brain, and hence his place in Nature. If he were a botanist, he would be reminded of the astonishing perfection of mechanism by which some plants subsist, and which has only lately been revealed to us by the skill and industry of Darwin. But the eye is patent to observation. Most of us have noticed the contraction and dilatation of the pupils; and must have been struck with the automatic exclusion or admission of light. A telescope has to be differently adjusted to objects at different distances; the eye has to be adjusted for the same purpose. Do we want to see distant objects? Certain muscular fibres relax; and the lens, which brings the objects to a focus on the retina, becomes flattened. If the object be near, the convexity of the lens, and with it its refractive power, are increased. Again, like the telescope, the eye must be accommodated to meet another difficulty. When the coloured rays—which combined make white light—pass through transparent lenses, they are refracted in different degrees. Were there no

compensation for this in the eye, as there is in achromatic telescopes, objects would often be blurred with prismatic tints. Is this inimitable instrument the product of natural selection ?

Darwin is satisfied that it is so. In support of his conviction, he points to the state of the eye in different stages of finish, as met with in different classes of animals. "The simplest organ which can be called an eye consists of an optic nerve surrounded by pigment cells and covered by translucent skin, but without any lens or other refractive body."<sup>1</sup> Such eyes merely distinguish light from darkness. "In certain starfishes, small depressions in the layer of pigment which surrounds the nerve are filled . . . with transparent gelatinous matter, projecting with a convex surface, like the cornea in the higher animals. . . . Within the highest division of the animal kingdom, namely, the Vertebrata, we can start from an eye so simple that it consists, as in the lancelet, of a sack of transparent skin, furnished with a nerve and lined with pigment, but destitute of any other apparatus. In fishes and reptiles, as Owen has remarked, 'the range of gradations of dioptric structures is very great.'"

Assailants demur to the whole proposition, upon a two-fold objection. First, they take up Darwin's words: "If it could be demonstrated that any complex organ existed, which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down;"<sup>2</sup> and they say: Your eye in its most rudimentary form is still a complex instrument; you must have pigment cells as well as an optic nerve. How do you account for the presence of either of them? Light "can have no tendency whatever to produce the deposit of black pigment that absorbs the rays, nor to shape the transparent humours into lenses, nor to form the iris."<sup>3</sup> Darwin readily admits that, how a nerve comes to be sen-

<sup>1</sup> *Origin*, &c., p. 144.

<sup>2</sup> Page 146.

<sup>3</sup> Murphy, *Habit and Intelligence*, p. 382.

sitive to light is as mysterious as life itself. How, then, did natural selection make a beginning? The enormous difficulty is this: Before selection could come into play, the "numerous, successive, slight modifications," upon which Darwin depends, must have been so co-ordinated and co-operative as to end in sight. So end, too, by that unaccountable process which we call accident. Here let me again remind you of the offence which some Darwinians take at the term "indefinite." The reason for their doing so is plain enough. It is obvious that if variations be indefinite or in all directions, the chances against their resulting in an eye are as good as infinite.

The same argument tells with equal force in every case of complicated structure. With characteristic candour Darwin illustrates the point by describing the extraordinary adaptation in the orchid *Coryanthes*. Its secreting horns pour water into a sort of bucket. The use of this bucket of water is to wet the wings of humble-bees which fall into it. When the bee crawls out by a narrow passage, it is compelled "to rub its back against the viscid stigma, and then against the viscid glands of the pollen masses." Thus the flowers of the plants are fertilised. Another orchid, named the *Catasetum*, has a totally different arrangement for the same purpose. The bees come to gnaw the lower lip of the flower; "in doing this they inevitably touch a long, tapering projection. . . . This antenna, when touched, transmits a sensation or vibration to a certain membrane, which is instantly ruptured; this sets free a spring by which the pollen mass is shot forth, like an arrow, in the right direction, and adheres by its viscid extremity to the back of the bee."<sup>1</sup> In these instances, and in every one of the kind, each part is dependent for its use on the perfection of every other part. Not only so; but we have complication multiplied into complication where the fertilising process depends, as it

<sup>1</sup> *Origin, &c.*, p. 155.

does with the *Catsetum* and with most animals, upon the reciprocal adaptations of opposite sexes.

Nor is this all. Mr. Murphy has remarked that the eyes of cuttlefish and of vertebrates are very much alike; and that insects have eyes of an entirely different pattern. Thus we have an extremely complicated organ independently produced on three distinct lines of descent; for if we trace these three classes back to a common ancestor, that ancestor had no eyes to transmit. Darwin declares himself unable to see any special difficulty here. The resemblance, he urges, is only superficial. If there were to be eyes at all, they "must be formed of transparent tissue, and must include some sort of lens for throwing an image at the back of a darkened chamber."<sup>1</sup> I confess myself quite unable to see any "must" in the case.

Dr. Huxley, speaking of Mr. Mivart's allusion to the "supposed" similarity between the eyes of fishes and cephalopods, says, "Mr. Mivart trips in a matter of anatomy," and implies that the resemblance is one of function rather than of structure. I contend that the anatomy is quite beside the question. No matter about the arrangement of the parts; we have, in both instances, crystalline lenses, pigment cells, retina, vitreous and aqueous humours, and optic nerves. All these surely constitute a resemblance far from superficial.

In the "Origin of Species," several other instances are supplied of independent development. Notable amongst them is the electric organs of fishes. "They occur in about a dozen kinds of fishes, of which several are widely remote in their affinities."<sup>2</sup> The organs are differently constructed, and placed in different parts of the body. Darwin says there is no reason to suppose that they have been inherited from a common progenitor. Indeed the supposition would be quite inadmissible.

This materially dilutes the argument drawn from intermediate grades, even where it does not annul it. If

<sup>1</sup> Page 151.

<sup>2</sup> Page 150.

outward conditions or inward conditions, or both combined, can *independently* produce such mechanism as this, we need not, nay, we must not, resort to natural selection. No one questions the agency of natural selection; no one denies its preservative efficacy. What we are here inquiring is: Does it in any sense explain the *origin* of an organ? If not, it does not explain the origin of a species.

Important as is the subject of INSTINCT, I shall not enter into a lengthened discussion upon it here. It partly belongs to the psychological problems hereafter to be dealt with, and partly to the question of inheritance yet to be considered. The only instances of it now to be noticed are, those of sterile ants and bees.

Natural selection is held to produce instincts through the joint agency of cumulative adaptation and inheritance. The adaptation may be either direct or indirect. It may be due to external condition, such as climate, nutrition, &c., or it may be due to altered habits and the use and disuse of organs. Be that as it may, the essentials in the case are accumulated adaptation, becoming permanent by transmission. The cell-building instinct of the bee, the provision for progeny they are never to see by wasps, flies, beetles, &c., are explained by natural-selectionists in this way. Mr. Wallace is of opinion that most so-called instincts, and especially that of nest-building with birds, are to be accounted for by imitation, just as the house-building of man is to be ascribed to imitation, and not to reason. But the distinguishing feature of instinct is one which can hardly be reconciled with Mr. Wallace's view. Mr. Wallace himself defines instinct as "the performance by an animal of complex acts absolutely without instruction or previously acquired knowledge."<sup>1</sup> He refuses to accept the theory of instinct, save where the terms of his definition can be certified. The reply is that, all acts commonly called instinctive are performed as well, or nearly as well, at

<sup>1</sup> *Natural Selection*, p. 204.

the very first attempt; which they would not be if merely copied from others. Mr. Wallace's theory has, however, the merit of shifting the difficulty, if not of greatly lessening it. Without some hypothesis of this kind it is almost impossible to comprehend how natural selection can produce the instincts of neuter insects.

The slave-making instinct of ants may be explained by inheritance, like any other instinct. "But with the working ant we have an insect differing greatly from its parents, yet absolutely sterile; so that it could never have transmitted successively acquired modifications of structure or instinct to its progeny. . . . But we have not as yet touched on the acme of the difficulty, namely, the fact that the neuters of several ants differ, not only from the fertile females and males, but from each other, sometimes to an almost incredible degree, and are thus divided into two or even three castes. These castes, moreover, do not commonly graduate into each other, but are perfectly well defined, being as distinct from each other as are any two species of the same genus, or rather any two genera of the same family."<sup>1</sup> The explanation offered by Darwin is, that selection here affects the family instead of the individual. Mr. Murphy rejoins, "If natural selection is applied in this way to bees and other social insects, the unit on which the forces of variation and selection act is not, as in all other cases, the individual, but the swarm; . . . and as the swarm, when it has grown into a colony, includes hundreds or thousands of insects, the number of individuals whereon the forces are to act is diminished in the inverse proportion, and the efficiency of natural selection indefinitely weakened."<sup>2</sup> This stricture seems to me more pertinent to ants than to bees. It is a trifle easier to understand how variation would advantageously modify a whole swarm, when the swarm is derived, as with bees, through a single parent; than to understand how certain members only of a com-

<sup>1</sup> *Origin*, &c., 229 ff.

<sup>2</sup> *Habit and Intelligence*, p. 417.

munity should be definitely modified, either at once or by degrees,—as must be the case with both males and females which beget the different castes; one set of parents bringing forth a sterile caste with a nursing instinct, another set a caste with an aphis-milking instinct, another begetting soldier neuters, another building neuters, and so on. The complex nature of the puzzle makes one's head swim to conceive it; and Darwin may well say, "This is by far the most serious special difficulty which my theory has encountered."<sup>1</sup>

Pass we to the next,—that of MIMICRY. In Letter VI. sufficient instances were adduced of this singular phenomenon, and enough was said about the explanation which natural selection is supposed to give of it. The objectors here lay the whole stress of their protest upon the improbability of the first step in the right direction, or upon the *uselessness of transitional modifications*. Once get a start, let the advantage gained by the new form be ever so minute, natural selection, they admit, will seize upon and perpetuate it. But it cannot have the slightest tendency to do this unless the change is profitable. Now, as just observed with reference to the orchids, most simple organs, and all complex ones, would be useless but for the subserviency of all the parts which go to make up their structure. This necessitates variations in many collateral directions in order to render the main change fit for selection. And if selection has nothing to do with the incipient changes, what has? The only answer open to us is—accident.<sup>2</sup> Then comes a calculation of chances. Mr. Murphy boldly estimates the chances against the requisite variations combining to establish an improvement at "a number about ten thousand times as great as the

<sup>1</sup> Sir John Lubbock has now proved that the working ants are imperfectly developed females, which do occasionally lay fertile eggs, and that the eggs invariably produce males.—*Ants, Bees, and Wasps*.

<sup>2</sup> "There is no improbability in the belief that an accidental resemblance to some common object was in each case the foundation for the work of natural selection," &c.—*Origin of Species*, p. 199.

number of waves of light that have fallen on the earth since historical time began."

The same writer claims to have drawn attention to structures which are not useful when first evolved, but which anticipate functions that are only manifested in higher stages of development. This argument, however, has been used before by Paley in his chapter on *Prospective Contrivances*. And Mr. Wallace in his essay on the limits of natural selection as applied to man has also endeavoured to show that, the brain of the savage is out of all proportion to the range of his intellectual needs or power. Looking at the size of the oldest known brain-cases and of those of existing savages, "the idea is suggested," says he, "of a surplusage of power; of an instrument beyond the needs of its possessor." And, as very little more brain than a gorilla's would have served the savage's purpose, Mr. Wallace thinks, we must admit "that the large brain he actually possesses could never have been solely developed by any of those laws of evolution, whose essence is, that they lead to a degree of organisation exactly proportionate to the wants of each species, never beyond those wants; that no preparation can be made for the future development of the race; that one part of the body can never increase in size or complexity except in strict co-ordination to the pressing wants of the whole."<sup>1</sup>

Mr. Murphy asks what possible use the dorsal groove, which in vertebrates eventually becomes a backbone, can be to a molluscous animal like an ascidian, which never has a backbone. If the Darwinian reply: It indicates not purpose, but descent; then the objector returns: But upon your theory, unless it were originally useful it would never have been preserved; and the common ancestor of the ascidians and the vertebrates could have had still less use for a dorsal groove or an incipient cartilaginous band below it than has the ascidian itself.

<sup>1</sup> *Ubi supra*, p. 343.

Perhaps the most remarkable instance of what Paley would have called "provisional contrivance" is met with in one of the extinct reptiles. Allusion has already been made to the affinity between birds and dinosaurians. The bones of most birds are, as you know, hollow. They contain air cavities which promote lightness without impairing strength. According to Professor Cope, a certain dinosaurian called *Megadactylus probyzelus* had these "pneumatic" bones. But no dinosaurian could fly. It would appear, therefore, that preparation was made in the bones of reptiles for a power of flight afterwards to be developed in birds.<sup>1</sup>

To all such cases, however, Darwin's first comment applies, viz., that we are not in a position to decide what structures now are, and certainly not what formerly were, useful to each species. Upon the whole, the argument does not strike one as very forcible. Its weight greatly depends upon the issue of the general-design question, consequently cannot much help to decide it.

<sup>1</sup> *Habit and Intelligence*, p. 359.

## LETTER XII.

IS man's MENTAL and MORAL nature a product of natural selection?

In the concluding series of these Letters, matter will be introduced which fundamentally touches the question now before us. Hitherto, throughout the whole discussion upon Teleology, we have ignored every point of view save the *realistic*, and have accepted this provisionally as our own. Consistently with the same method, we may continue to adopt (since Darwin does so) the realistic doctrine that the inner relations, which constitute intelligence, are products of the outer relations, which include both the organism and its environment. In other words, we adopt (but only to enable us to discuss the subject at all) the vulgar notion of *dualism*, which elsewhere we shall have to condemn.

The form and the strength of the evolutionist's argument is this: The mind of man is as his brain; his brain has been gradually developed from lower structures; therefore his mind is evolved like, or from, lower minds.

Darwin's first aim is to show that "there is no fundamental difference between man and the higher mammals in their mental faculties." His well-chosen instances would (from his point of view) almost suffice to confirm this proposition. No observer of the higher animals could entertain a contrary opinion, unless his judgment were strongly biassed by conflicting notions. Great as the gap is between man and ape, it is not so great as that between ape and fish. Nothing, therefore, is to be gained by pointing at

broken continuity, unless the breach be demonstrably between different kinds.

Taking the intellectual faculties of man, the disputed ones are: his sense of beauty and enjoyment of artistic arrangements of form and colour; his self-consciousness, or sense of individuality; his powers of abstraction, by which he arrives at general and universal truths; his belief in God, and his speculations on a future state.

"How," asks Mr. Wallace, "could natural selection, or survival of the fittest in the struggle for existence, at all favour the development of mental powers so entirely removed from the material necessities of savage men, and which even now, with our comparatively high civilisation, are, in their farthest developments, in advance of the age, and appear to have relation rather to the future of the race than to its actual status?"

To this, other selectionists would reply: Savage man even now has little or no power of abstraction. The Fuegians have no abstract terms. In the Choctow language there is no name for an oak, still less for a tree. The Tasmanian cannot express "qualities such as hard, soft, warm, cold, long, short, round, &c."<sup>1</sup> As a striking proof of the low mental condition of many savage races, Sir John Lubbock mentions "the undoubted fact that they are unable to count their own fingers, even of one hand."<sup>2</sup>

As to man's sense of beauty, this cannot be regarded as a mark of distinction, since it is evident from the habit of displaying their plumes that birds are susceptible to the charms of colour.

Self-consciousness and individuality could not have been developed in man, "until," says Darwin, "his mental powers had advanced to a high standard, and this implies the use of a perfect language."<sup>3</sup>

Language itself, it has often been urged, is a possession

<sup>1</sup> Lubbock, *On the Origin of Civilisation, &c.*, p. 332.

<sup>2</sup> *Loc. cit.*

<sup>3</sup> *Descent of Man*, vol. i. p. 62.

peculiar to man. But to say nothing of the extreme imperfection of the language of some savage tribes,—which consists as much in signs as in sounds, all animals seem to have the power of inter-communication either by inarticulate sounds or by gestures. Many, indeed, like the parrot and the starling, are able to imitate our vocables. And it is highly probable that this faculty of imitation, by virtue of which alone birds (as experiments have proved) learn the cries and songs peculiar to their species—it is probable that this power, which man shares with other animals, was mainly instrumental in the development of language. “It does not appear altogether incredible that some unusually wise ape-like animal should have thought of imitating the growl of a beast of prey, so as to indicate to his fellow-monkeys the nature of the expected danger. And this would have been a first step in the formation of language.”<sup>1</sup> In most, if not in all tongues, the names of certain animals are evidently derived from the sounds which the animals themselves make.

The advantages of these powers of communication are as obvious as the truth that natural selection would preserve and foster their improvement; every gain to a language would be a corresponding gain to intelligence. It is hardly fair, therefore, to take the intellectual faculties of cultivated man, and say, as Mr. Wallace says, these are not required by the savage. True, savage men have no need for such mental powers; but neither do they possess them. If Mr. Wallace means that, as owners of human brains, they are potentially endowed with these capacities, this is a point few will be willing to concede. No one supposes the size of a brain is by itself a test of its functional power. The skull of a human being is as capacious at twelve or fifteen years old as at fifty. But the brain of the same individual between these ages must undergo very great change; and though some savages have

<sup>1</sup> *Descent of Man*, p. 57.

shown themselves capable of a certain degree of culture, the limit, I fancy, is soon reached. Amongst ourselves there is no lack of large heads, gifted with an incapacity quite invincible.

Of an intuitive belief in God, I shall have to speak in another place. Here I can only express my conviction that, though there may be the same, there is no more, pretext for the statement that religious belief is innate in man, than that it is so in the dog which bays at the moon. Imagination, combined with the fear which is inseparable from ignorance, would generate the same kind of superstition in both. The imaginary presence of the dead in dreams would, as already argued, naturally lead to a belief in the independence of soul and body. But the belief thus originating could not be esteemed in any way as a religious instinct peculiar to man.

If we pass from the Intellectual to the Moral faculties, the selectionist assures us that his position is equally unassailable. Starting with the social instinct which impels men, like other animals, to herd together,—an instinct which selection would have evoked as advantageous both to the individual and to the community,—the social life would give rise to affection, and, with advancing intelligence, to sympathy.<sup>1</sup> The distress of the animal that has lost its companions, is due originally to the sense of greater safety enjoyed in their presence. When the safety of the individual was understood to depend on the safety of the community, the simple affection, amounting at first to a mere social propensity, would pass into a readiness to protect and cherish others, even at the cost of present convenience. Natural selection would at once come into play; “for those communities which included the greatest number of the most sympathetic members would flourish best and bear the greatest number of offspring.”<sup>2</sup>

As it would be impossible for human beings to live

<sup>1</sup> For further views on sympathy see *infra*, Letter xiv.

<sup>2</sup> *The Descent of Man*, vol. i. p. 82.

together without regard to the interests of one another, certain lines of conduct would inevitably be encouraged, while others would meet with resistance. Whatever acts promoted the welfare of the strongest,—which, as a rule, would be the majority,—such acts would be considered right, and their opposites wrong. Selection, taking hold of those qualities which operate for the general good, would, out of the social instinct, and out of the sympathy which may or may not be consequent to it, give rise to the moral sense which discriminates between right and wrong, and also to the conscience which sits in judgment upon our choice.

This reduction of morality to an observance of rules founded, not for the well-being alone, but for the preservation of each and all, has never, you may be sure, been suffered to pass unchallenged. Since the days of Plato men have disputed the meaning of virtue, the criterion of right and wrong, the *summum bonum*, and the end of moral conduct. One set have always leaned to the practical, the other to the transcendental or sentimental, theory of ethics. Naturally any objectors to Darwinism, whose bias lay in this latter direction, would decline to admit what they already deemed a false doctrine as illustrative of a theory from which they were also averse.

But there is nothing new even in the form of the argument which Darwin's critics oppose to his theory of a factitious moral sense. We have merely a revival of the old controversy between the intuitive and inductive schools of ethics. Mr. Mivart, for example, complains that the evolutionists "confound our moral judgments with the gregarious instincts of beasts." He insists, as the intuitionists always have done, upon an essential difference between the ideas "useful" and "right." He declares that the derivative theory fails to account for our natural "abhorrence" of certain acts, or for the remorse which follows crime. He points to the fact that "duty" and "interest" are often in direct antagonism, and so far

from natural selection preserving the unselfish, it would have the opposite effect; "for self-immolators must but rarely leave descendants, while the community they benefit must by their destruction tend, so far, to morally deteriorate."

In the first place, what is it Darwin himself stands out for? Here is his fundamental proposition:—"That any animal whatever, endowed with well-marked social instincts, would inevitably acquire a moral sense or conscience as soon as its intellectual powers had become as well developed, or nearly as well developed, as in man."<sup>1</sup> This quite justifies Mr. Mivart's impeachment of natural selection, on the ground that we are asked "to believe that the conceptions of the highest human morality arose through minute and fortuitous variations of brutal desires and appetites in all conceivable directions."<sup>2</sup> But what then? Is there any force in the appeal to our repugnance to be likened to the lower animals, unless it can be proved, by something better than sentiment, that an essential difference does actually exist?

It has always been felt that there is force in this appeal to the conscious superiority of our moral nature over that of brutes. It has always been felt, and is strongly felt by the majority of civilised men, that the immediate perception of the difference between right and wrong, the feeling of duty or moral obligation,—all, in short, that is implied by conscience, testify to the existence of some distinct faculty or power of the mind—called the "moral sense,"—that is just as ultimate a mental property as is the sense of touch or colour. It has always seemed incredible to some men that affection, friendship, sympathy, fidelity, gratitude, humanity, &c., which are directly concerned with the well-being of others, should spring from the very same source—self-love—which not unfrequently ends in utter disregard for the pleasures or pains of others. But is

<sup>1</sup> *The Descent of Man*, vol. i. p. 71.

<sup>2</sup> *Genesis of Species*, p. 220.

natural selection pledged to this tracing of virtue, morality, justice, and benevolence, to the one source of self-interest? Darwin affirms nothing of the kind. He sets out, you observe, with "a well-marked social instinct." He differs from John Mill, who believes, "the moral feelings are not innate, but acquired." He declines to accept self-love as the sole foundation of morality; and rejects even the "greatest-happiness principle," because of the suspicion of selfishness with which it is tainted. "The moral sense," says he, "is fundamentally identical with the social instincts; and in the case of the lower animals it would be absurd to speak of these instincts as having been developed from selfishness, or for the happiness of the community. They have, however, certainly been developed for the general good of the community." Happiness, as incident to welfare, becomes "a most important secondary guide and object;" but "the primary impulse and guide" are "the social instincts, including sympathy." "Thus the reproach of laying the foundation of the most noble part of our nature in the base principle of selfishness is removed, unless indeed the satisfaction which every animal feels when it follows its proper instincts, and the dissatisfaction felt when prevented, be called selfish."<sup>1</sup>

And selfish, I fear, his opponents still would call it. At least I doubt whether Mr. Mivart, and those who think with him, would consider the reproach removed by merely substituting "general good" for "greatest happiness" as the highest sanction of morality. The vital question is, whether the moral sense is derivative or not; and this it is which we must now set ourselves to answer.

The literature of this great controversy is so extensive that I must leave unnoticed all but the leaders on either side, keeping as much as possible to my original design of discussing the creeds of our own day.

Amongst the advocates themselves of either theory of

<sup>1</sup> *The Descent of Man*, p. 98.

morals, there are certain minor differences of opinion ; upon the broad principles of each, there is agreement. The doctrines of the intuitive school have already been indicated ; those of their opponents need only be roughly characterised at present, as *a system of moral consequences* : actions being good or bad as they tend respectively to promote the happiness or unhappiness of ALL concerned. The knowledge or perception of this tendency is not obtained by any simple or innate power of the mind ; but by the same process of experience as that by which all other knowledge is acquired. Approval and disapproval are associated from earliest infancy with certain lines of conduct ; and we come at last to read at a glance what once we had to spell with effort. This immediateness has all the character of intuition. The sense of duty, the feeling of "ought" and "ought not," are reflections in our own minds of an authority which is external.

If you turn to the *précis* of Locke in the third series of these letters, where he says, "Good and evil . . . are nothing but pleasure or pain, or that which occasions or procures pleasure or pain to us," you will find the above statement accords pretty nearly with his description of virtue and vice. With Locke, however, the expression "pleasure and pain to *us*," should not be interpreted as reducing morality to a purely selfish standard, but rather as making our own feelings the test of other people's ; which they must be even in the case of the most perfect disinterestedness. Nevertheless, Locke lays no stress upon *sympathy* as a disinterested motive for action ; while this is an essential characteristic of that school to which John Mill gave the name of Utilitarian. To our inquiry, the presence of one genuinely altruistic principle in our mental composition is of serious import. For if it exists, we may doubt whether natural selection would account for it ; and there may be truth in what Mr. Mivart says about self-immolators. This we shall come to hereafter.

The views of each party can best be gathered from the assaults upon their adversaries. The polemical writings of the late Dr. Whewell will serve as well as any to begin with. He was one of the doughtiest opponents, in his day, of utilitarian ethics; and as a lecturer on Moral Philosophy and author of a System of Morals, he may fairly be supposed to have had a competent acquaintance with the subject.

Whewell has but two rational objections to what he described as *dependent* morality. "First, because the resulting happiness is not calculable; and, secondly, because the virtue is one of the things which determine the resulting happiness."<sup>1</sup> I call these the only rational objections, since his others, if not irrational, are at best sentimental; and therefore cannot be treated argumentatively. They are, however, always made to do duty for arguments, and are invariably advanced by writers of the intuitive school. Here, for instance, is a precept which he lays down as distinguishing independent from dependent morality: "That a thing is right is a *supreme* reason for doing it." Is it painful? Is it a loss? Is it unkind? No matter; if it is right we must do it. "These," says Whewell, "are self-evident propositions." By which he means, not only is the *supreme* reason for doing a thing intuitively seen to be its *rightness*, but that this intuitive perception is due to the fact that man is a moral being. "The real importance of the great fact of the universal and perpetual judgments of mankind concerning actions as being right and wrong is, that such judgments are thus seen to be a universal property of human nature—a constant and universal act, which man performs as being man."<sup>2</sup>

The unfairness of the implied distinction—the innuendo that "*I* am for these noble things, *you* are for pleasure or utility," as John Mill puts it,—is thoroughly exposed by the latter in his trenchant essay on Whewell's "Moral Philosophy."

<sup>1</sup> *Lectures on Moral Philosophy*, p. 224.

<sup>2</sup> Page 235.

That we ought "to do what is right" is self-evident; it is an identical proposition. It is the same as saying, it is right to do what is right. But it need not be said that the intuitionists have no monopoly of this maxim. The disputed matter is, how we apprehend right to be right. Is it by means of a special moral faculty? or is there anything "immutable and eternal" in right actions by which they may be known *independently* of their consequences? Yes, says Whewell. Justice, benevolence, chastity, all the virtues are eternally and immutably right. It is by no distinct faculty (apart from the moral sense of a rational being) that we know this; yet, "the reason sees the reasons for human actions; and among these it sees the supreme reason, which is that they are right."<sup>1</sup> So it is right to control desire and affection, "because reason alone can see what is right." We judge morally because we have moral natures. We walk because we have legs. But this no more accounts for our legs, than the other fact for our consciences. Right is right because it is apprehended to be so by our constitution as moral beings. We are moral beings, because our reason tells us what is right. The vicious circle is complete.

Examine the two fundamental objections above cited. First, that, consequences cannot always be foreseen; therefore the test of utility cannot be applied. "Who," he asks, "can prove that if I tell an apparently harmless or agreeable lie, it will in the long-run, and taking all the history of the world together, produce more pain than if I had told the truth?"<sup>2</sup> No one can foretell what may never befall. The lie may be more than apparently harmless; it may be highly beneficial. If I misdirect a criminal so as to frustrate his crime, my lie is advantageous both to him and his victim. This is just a crucial signpost between dependent and independent morality. If veracity were immutable and eternally right, if it possessed any

<sup>1</sup> *Introductory Lecture.*

<sup>2</sup> Page 173.

inherent sacredness irrespective of consequences, it would be wrong in a mother to misguide a ruffian who sought to destroy her child. The utilitarian, on the contrary, would apply the criterion of consequences in this as he would in every case where he could foresee them. Wherever he could not, he would bring the particular case under its appropriate class, and be guided in his moral judgment by the rules laid down for the class. Thus the exceptional case of a beneficial, therefore virtuous, lie would in no wise impair the general advantage, and hence rightness, of speaking truth.

In his lecture on Christian Morality, Whewell goes fully into the matter of lying in its relation to conscience. It is instructive to see how completely the *absolute* system breaks down in the presence of cases of deception justified in the Scripture narratives: such, *e.g.*, as that of Rahab, who told the people of Jericho that Joshua's spies had left the city, when (in truth) they lay concealed by herself under her own roof; and "who," adds Dr. Whewell, "was saved, and had a place in the lineage of our Lord," because she had told the lie! Also in the case of the Hebrew midwives, who spared the male children of their countrywomen by deceiving Pharaoh, the lie was rewarded by the Deity; for "it came to pass, because the midwives feared God [*i.e.*, lied as above] that he made them houses."<sup>1</sup>

Whewell quotes Augustine's instance of a sick man, to whom it is a question whether one should deny or admit the death of his son;—the news being likely to cause the father's death too:<sup>2</sup> like St. Augustine, Whewell finds his *absolute* morality sorely puzzled. He seems very doubtful whether "a fervour of love for the idea of perfect goodness, such as is entertained in the minds of perhaps a few Christians only, "should be made the sole ground of our decision." He has no doubt about "the greater moral beauty of perfect truth;" still, fervour may not always be an infallible guide. On the other hand, he quite agrees with

<sup>1</sup> Exod. i. 21.

<sup>2</sup> Page 87.

Augustine, "If we ever allow that we may in any case tell a lie, it is difficult to draw any line by which the permission may be bounded, and thus the love of truth may be utterly destroyed."<sup>1</sup>

These casuistical stumbling-blocks serve well to expose the defects of the system which Whewell defends. The difficulty of drawing the line inherent to the sentimental theory does not the least embarrass the Utilitarian. He affirms, the line is always to be drawn at a point determined by expediency. Does the Absolutist protest that this opens the door to the Jesuitical rule—the end justifies the means? The Utilitarian may unhesitatingly admit the charge; for in the majority of remedial measures, are we not acting on the principle that the end does justify the means? What else guides us in punishments, or in surgical operations? The maxim is generally regarded with obloquy because of the abuse of it by Loyola and his followers. With them it meant that the acceptance of certain superstitions justified any amount of persecution to enforce it. But no one thinks (at least I do not) that, the judge who sentences a murderer to death, tends to utterly destroy the commandment: Thou shalt not kill. The possibility of error is not to be charged to the principle of utility. As Bentham says, "If a man calculate badly, it is not arithmetic that is at fault; it is himself." We might as well say chloroform is always bad because it is sometimes fatal. Although the consequences of particular acts may be indiscernible, all the great duties respecting life and property have been stereotyped by the accumulated experience of ages; and the liability to err in complex cases is as likely to be the fate of one system as of the other. One may be mistaken as to what he thinks useful; but the other may be wrong as to what he feels right. There is certainly no guarantee for the assumption that feeling is less fallible than reason.

"That we cannot derive the moral value of actions from

<sup>1</sup> Page 89.

the happiness which they produce, because the happiness depends upon the morality.”<sup>1</sup> To argue otherwise involves us, according to Whewell, in a vicious circle. The Benthamite, he says, “thinks it virtuous because it gives him pleasure; and it gives him pleasure because he thinks it virtuous.” Substitute “right” for “pleasure,” and the circle is that which we imputed to Whewell. The fact is, Whewell’s argument rests on the ambiguity, *i.e.*, on the distribution, of its middle term. His *reductio ad absurdum* is: “The virtue depends upon the pleasure; the pleasure depends upon the virtue.” But the term “pleasure” refers here to the many in the first proposition, and to the agent alone in the second. Written out, Whewell’s argument would stand thus: Because virtuous conduct brings pleasure to the agent *himself*, therefore regard to the pleasure of the *many* cannot constitute virtuous conduct. The fallacy is transparent.

To charge the Benthamite with thinking *that* virtuous which merely gives *him* pleasure, is the common perversion of the sentimentalist. There are believers in what, in modern phraseology, is called egoistic hedonism — the purely selfish pursuit of pleasure as pleasure; but neither Bentham nor any one of his illustrious followers intended “greatest happiness” to mean the greatest happiness of the agent. It was intended to include all concerned, “without regard to the villosity of the skin or the termination of the *os sacrum*.” And modern utilitarians, especially the greatest of them, John Mill, have eloquently preached unselfishness; nobly proclaiming that the absolute sacrifice of one’s own happiness for the sake of others “is the highest virtue which can be found in man.”<sup>2</sup>

Yet, if the pleasure a virtuous man feels is self-approval, and this (as the inductive school declare) is no more than the consciousness of deserving the approbation of others;

<sup>1</sup> Whewell, *Lecture XV.*

<sup>2</sup> J. S. Mill, *Utilitarianism*, p. 23.

then the moral sanction is nothing after all but the popular sanction. "And if," says Whewell, "murder, sensuality, falsehood, oppression, be in any cases popular, this popularity tends to make them virtues, for it gives them the reward of virtue."<sup>1</sup> Exactly so. This is just what happens. To the Thug, murder is the most virtuous of acts. To the street Arab, theft is a virtue; to come home empty-handed a crime. If the Turk does not deem sensuality a virtue, he nevertheless contemplates it as the heavenly reward of virtue. Indeed, hardly a vice can be named which in some country or in some age has not been consecrated by custom and popular opinion. What stronger evidence could we have that morality is an institution of society, based upon what society believes best tends to promote its happiness? And what stronger argument could we have in favour of such a dispensation? For, if the criterion of morality is an external one, then its method of procedure is both empirical and rational. We may feel assured that cumulative experience, enlightened by higher culture and intelligence, will ultimately yield a system of morality far in advance of that which we now possess. "The rule of life, drawn from the practice and opinions of mankind, corrects and improves itself perpetually, till at last it determines entirely for virtue, and excludes all kinds and degrees of vice."<sup>2</sup> The first step towards doing what is right is to know what constitutes right.

I suppose every one who entertains the popular theory of intuitive morality, does so in the persuasion that the feeling of duty loses something of its imperative character, something of its sacredness, if we deny conscience to be a simple and ultimate power of the mind. There is a double comfort in the idea that certain impulses are prompted by a Divine Being; and that the love of such a Being is to be won by yielding to them. Most people think virtue—whose office is to render us superior to this world—degraded by

<sup>1</sup> Page 231.

<sup>2</sup> Hartley, *Observations on Man*, vol. ii. p. 214.

treating it as "nothing more than an instrument to procure the temporal, the physical good of individuals, or of society." Whewell quotes Robert Hall to this effect with warm approval. But is it not strange such men should fail to see that, contempt for temporal welfare is but bartering transient for continuous happiness,—is but a surrender of worldliness for "other-worldliness?"

Shall it be said that God speaks to us through our consciences; and that we obey the dictates of our moral sense, not for the hope of reward, but because we owe obedience to the Author of moral distinctions? Even Whewell admits that the inherent defectiveness of such a proposal cannot be concealed. "For how," he asks, "does our obedience to God on this view differ from our obedience to an arbitrary tyrant invested with superior power, or from the service which the idolater renders to an impure and cruel deity?"<sup>1</sup>

<sup>1</sup> *Lecture IX.*

## LETTER XIII.

*(In continuation.)*

MR. LECKY is another historian of morals who upholds the cause of the intuitionists. As with Whewell and so many other writers of this school, he prepares us for his criticism of utilitarianism by a derogatory representation of it. "We have here, then," he tells us, "a general statement of the doctrine which bases morals upon experience. If we ask what constitutes virtuous and what vicious actions, we are told that the first are those which increase the happiness or diminish the pains of mankind, and the second are those which have the opposite effect. If we ask what is the motive to virtue, we are told that it is an enlightened self-interest."<sup>1</sup> True, Mr. Lecky adds there are modifications of this theory; but he again repeats as a distinctive characteristic of the inductive school: "the only motive to a virtuous act they conceive possible is the real or supposed happiness of the agent."<sup>2</sup> And, in another place, "It is not, I think, a strained or unnatural use of language to describe as selfish or interested all actions which a man performs in order himself to avoid suffering or acquire the greatest possible enjoyment. If this be so, the term selfish is strictly applicable to all the branches of this system."<sup>3</sup> This would be quite correct if applied to the doctrine of Aristippus and the Cyrenaics; in a measure it would apply to the Stoics and Peripatetics;

<sup>1</sup> *History of European Morals*, p. 5.<sup>2</sup> Page 19.<sup>3</sup> Page 31.

it would apply to Epicurus, with some latitude to Hobbes, and with perfect fairness to Mandeville. But it is hardly necessary to repeat that, Utilitarians or Benthamites would scornfully repudiate so unfair a description of their system.

Instead then of accepting the statement that, selfishness is the basis of utilitarianism, and therefore the fundamental distinction betwixt the two schools, we must regard this distinction as lying in the belief, or denial, of a *moral sense*; and hence in the independent or dependent nature of morality. The objection to the latter theory, that the dependence ultimately resolves itself into the real or supposed happiness of the agent, touches the very heart of our discussion. We are trying to get at the fountain-head of man's moral nature, and this form of the inductive theory—this feature in it—will certainly not be overlooked. But we have not yet done with the true characteristics of the two schools, and the claims of these must be carefully weighed before we advance farther; since, it is clear that if the existence of a moral sense, or if absolute and independent morality, were established, it would be superfluous to ask whether egoistic hedonism were the key to our problem.

I spoke of sympathy as a disputed principle with the utilitarians. But I did not intend to imply that the admission or denial of sympathy as a motive was tantamount to the admission or denial of pure selfishness in its most objectionable sense. A utilitarian may (in perfect consistency with his view that morality depends on consequences) believe that, God so ordained the world that man should acquire the knowledge of right and wrong only through experience of their effects; and so believing, he may be influenced by the desire to walk in the ways of the Lord. The absence of sympathy here, would not be equivalent to selfishness. Or he may not believe in God at all; and yet be impelled by the wish to perfect his own character by habitual self-sacrifice or by self-culture, apart from any

philanthropic motive; which again could not be deemed selfishness in a bad sense. On the other hand, he might, with Adam Smith, Schopenhauer, John Mill, Mr. Bain, and a host of others, recognise Sympathy as "a natural fact of our constitution,"—or, as Bentham describes it, "the *propensity* that a man has to derive pleasure from the happiness, and pain from the unhappiness of other sentient beings;"<sup>1</sup> in this case also, philanthropy, not its exclusion, becomes the distinctive characteristic of utilitarianism. We shall presently address ourselves especially to Sympathy; for this, if there is any, is the one disinterested principle in our nature, and the origin of it must more or less decide the claims—here disputed—of natural selection. Meanwhile we must go back to Mr. Lecky.

He begins his defence of the opinion that our moral feelings are "developed by but not derived from education," by an appeal to the feelings and language of mankind. He reminds us, as is usual, that "the terms honour, justice, rectitude, or virtue, and their equivalents in every language, present to the mind ideas essentially and broadly differing from the terms prudence, sagacity, or interest. . . . The universal sentiment of mankind represents self-sacrifice as an essential element of a meritorious act, and means by self-sacrifice the deliberate adoption of the least pleasurable course without the prospect of any pleasure in return." This is the rhetorical device of making capital of what is not denied. The popular use of the above terms no one disputes: but the universality of the sentiment that, the promotion of the happiness of man is a duty, does not offer the vestige of a reason for Mr. Lecky's assumption that, "we arrive at this fact by direct intuition."<sup>2</sup>

On all sides the ambiguity of the oracle of this moral faculty is admitted. The believers in the popular theory do not pretend that we have any intuitive perception of

<sup>1</sup> *Principles of Morals and Legislation*, ch. vi. vol. xx.

<sup>2</sup> *Ubi supra*, p. 39.

what is absolutely right or wrong in this or that particular case. All they can aver, in the face of the diversity of the sentiment, is that, we have an indefinite sense of duty—a feeling of “ought” and “ought not.” The application of this is not made by the feeling itself, but by something different from it. “Our moral faculty . . . supplies us only with the general principles of moral judgments; it is a branch of our reason, not of our sensitive faculty.”<sup>1</sup> But if all the details of the system have to be settled by reference to an external test, and nothing internal remains save the simple consciousness that wrong is not right, that there are some things we ought and some we ought not to do,—the system, to make the most of it, is not of much practical value. Granting its existence (which of course we do), we may still ask what is there in this simple fact of our nature which could not, nay, which must not, have been developed empirically?

The anti-inductive party cling to this notion of Mr. Lecky’s that, utilitarian principles “may be very useful as a guide in life; but in order that they should acquire moral weight, it is necessary to presuppose the sense of moral obligation.”<sup>2</sup> What is there in the nature of conscience to warrant such a hypothesis? The dog that has stolen a cutlet from the table when your back was turned, betrays his guilt by signs of contrite shame, long before you discover the nature of the offence. Herein is manifested the working of the dog’s conscience. Does this presuppose a sense of moral obligation apart from his recollection of a whip? And would not a child’s education engender precisely similar feelings of contrition as a consequent of what it had learnt, from experience, to think wrong? Would not the opposite feelings, for the like reason, attend the opposite behaviour? Unless the believers in self-evident morality can prove that education would not do this (and the *onus probandi* falls upon their shoulders), they have no right to resort to mystery.

<sup>1</sup> J. S. Mill, *Utilitarianism*, p. 3.

<sup>2</sup> Page 66.

In answer to the independent theorist, it is a significant fact that, the morality of the most cultivated and intelligent peoples is just what it would be if framed purely with reference to the well-being of society. It certainly favours the belief that, "the rules of equity or justice depend entirely on the particular state and condition in which men are placed, and owe their origin and existence to that UTILITY which results to the public from their strict and regular observance;"<sup>1</sup> for, "it is impossible but that everything which promotes the interest of society must communicate pleasure, and what is pernicious gives uneasiness."<sup>2</sup> Veracity, benevolence, chastity, courage, fidelity, mercy, generosity, can have no meaning out of relation to the social states. What general notion of duty can we have independent of particular duties? We might as well say the use of words presupposes the idea of language. Surely, "this coincidence between the sentiments and a power adequate to produce them goes far towards proving causation."

To return to Mr. Lecky's statement that we adopt the least pleasurable course, &c., I declined to accept this as an argument, on the score that it is but an identical proposition—a definition of the meaning of self-sacrifice. This style of reasoning seems to commend itself to Mr. Lecky as more forcible than what he speaks of as "the utter futility of the objections which from the time of Locke have been continually brought against the theory of natural moral perceptions." So, for instance, he tells us, "The unchangeable proposition for which we contend is this—that benevolence is always a virtuous disposition—that the sensual part of our natures is always the lower part:"<sup>3</sup> which explains nothing beyond the meaning of certain terms. There may, however, be more than this in the averment that we deliberately adopt the least plea-

<sup>1</sup> Hume, *Concerning the Principles of Morals*, sect. iii.

<sup>2</sup> *Ibid.*

<sup>3</sup> *Ubi supra*, p. 110.

surable course without the prospect of any pleasure in return ; and its contents may be either true or false.

In the first place, to say that, we choose the course we believe to be the least pleasurable, is true or false according to the meaning of pleasurable. If it mean that, we reject our own selfish pleasure—which may be at the cost of others—for the pleasure we give to others at our own cost, the proposition is true. If it mean that we adopt the least pleasurable course because we love virtue for its own sake, this is partially true. But, if this pure love of virtue be due to association (a point presently to be considered), and if Bentham be right that, “virtue is the sacrifice of a smaller to a greater interest, of a momentary to a permanent interest, of a doubtful to a certain interest,”<sup>1</sup> then is it no more than a partial truth. Lastly, if it mean that there is no pleasure in self-sacrifice, the proposition is altogether false ; for it affirms that a man prefers that course which he does not prefer. What is here described as the least pleasurable course is proved by his preference to be the more pleasurable, although under *any other* circumstances he would shrink from it. It is perfectly true, people often do from virtuous motives (as they do from prudential motives) what they dislike doing ; and the merit of the act—its virtue—is often to be measured by the amount of dislike overcome. But though the course chosen is painful, the course rejected would be more painful. Were it not so, no voluntary action would occur. The pleasure, however, which accrues to the good man’s choice, and which is inseparably associated in his mind with virtuous conduct, so far from lessening his merit, is that which constitutes it. It proves that his own peace of mind depends upon the well-being of others. It certainly does not prove, what the cited passage would seem to imply, that the mental state which follows self-sacrifice is not agreeable. In all such cases of conflicting motives the sacrifice consists in subduing a

<sup>1</sup> Chap. ii.

present inclination for ulterior advantage, either to oneself, or to others, or to both. If to oneself alone, it is a mere act of prudence. If to others, then what a man feels is that, he would suffer more from the consciousness that they suffered through him than he would now suffer by the sacrifice of himself. If the contemplated benefit be to oneself and to others, then is the act compounded (as many acts are) both of prudence and of virtue. In every instance of self-sacrifice, the choice is one of evils. Nevertheless a man chooses that which is the least objectionable to *himself*.

The love of virtue for its own sake : Is it true, as Mr. Lecky affirms, not only that we arrive by direct intuition at the fact that, the promotion of the happiness of man is a duty, but also that, "chastity and truth have an independent value, distinct from their influence upon happiness?"<sup>1</sup> If they have an *independent* value, then, to be sure, love of virtue may have no ultimate reference to happiness. The thesis is backed by the following arguments. To begin with, "the morality is very clear, the consequences are often very obscure." Furthermore, no two nations, perhaps no two individuals, agree about the conditions of happiness. It is not likely, therefore, that virtuous people should aim at a remote end about which they have not even made up their minds. Anyhow the doctrine of consequences lands us in all sorts of scrapes. "In the first place, it is obvious that if virtues are only good because they promote, and vices only evil because they impair, the happiness of mankind, the degrees of excellence or criminality must be strictly proportioned to the degrees of utility or the reverse."<sup>2</sup> What ensues? Why, the immediate good may possibly outweigh the remote evil. If it does, if the balance is on the side of happiness, then murder, theft, or falsehood will be useful. We have already seen that this "startling conclusion" is quite logical, and may actually be admitted without endangering morality.

<sup>1</sup> Page 39.

<sup>2</sup> Page 40.

A lie, it was remarked, may be virtuous; killing in self-defence is justified; killing in battle is thought glorious, and fortunate warriors are loaded with pensions and peerages. If the balance be on the side of good, killing is useful, and ceases to be called murder. In like manner, the annexment of a conquered country is a political burglary, sometimes, though rarely, justified by utility.

Mr. Lecky objects that, if the doctrine of consequences be allowed, "the question of the morality of a large number of acts must therefore depend upon the probability of their detection." How far is my act likely to produce imitators, or affect the conduct and future acts of others? "If," says he, "remorse be absent, the indulgence of the most vicious imagination is a pleasure; and if this indulgence does not lead to action, it is a clear gain, and therefore to be applauded." This illustrates an oversight very common with the anti-utilitarians, *i.e.*, the effect of vice, secret or not, upon the agent's own character. It is a fallacy to talk of vicious imagination not leading to action. Every voluntary act is first a thought. Every thought is the more likely to become an act the oftener it is indulged in. One criminal thought entails others. So that the supposed indulger would gradually become a centre of seething vice, ready to explode into crime with the first opportunity for action. Nor is it conceivable that, the secret indulgence here spoken of could be a clear gain, even to one who led a life of solitude. The hankering after the absent objects of revenge or lust, or whatever they might be, would so inflame the unbridled and morbid passions, that the general health of body and mind would inevitably suffer. Think then as we will of loving virtue for its own sake, we cannot doubt that vice is hateful for its consequences.

Independent morality stands on the same footing with the occasional immediateness of the moral judgment. The inductive school agree that, one and the other are explained by association. "All men have the daily experience that their own acts of justice and beneficence dispose other

men to be beneficent to them ; their own acts of injustice and malevolence dispose other men to bring evil (which in this case they call punishment) upon them, and to abstain from doing good. This experience is of course followed by the usual association between cause and effect.”<sup>1</sup>

“By a familiar effect of contiguous association, the dread of punishment clothes the forbidden act with a feeling of aversion, which in the end persists of its own accord, and without reference to the punishment. Actions that have long been connected in the mind with pains and penalties come to be contemplated with a disinterested repugnance ; they seem to give pain on their own account. This is a parallel, from the side of pain, of the acquired attachment to money.” “Whenever an action is associated with disapprobation and punishment, there grows up, in reference to it, a state of mind indistinguishable from moral sentiment.”<sup>2</sup>

I think we need hardly trouble ourselves to examine the opinions of many other writers on the intuitive side of the dispute. We find only varied expressions of precisely similar views. Cousin, for example, presses the distinction between prudence and duty. “Rechercher le plaisir et fuir la douleur,” formulates a precept which is appropriate to the first, but not to the latter. “I despise my pleasures—je m’applaudis de mes douleurs—I laugh at my fears and my hopes ; I reject the solicitations of that nature which environs me, and often triumph over it ; I brave it even when it crushes me.”<sup>3</sup> The absolute empire which man thus exercises over certain acts of his life is due to the absolute freedom of his will. It is true, Cousin inclines to the common-sense theory of morality. Like Kant, he acknowledges reason as the real foundation of the moral judgment. Still, as we shall see, he looks upon reason as a purely transcendental principle ; *i.e.*, as the voice of eternal truth speaking through man. This

<sup>1</sup> James Mill, *Analysis of the Human Mind*, chap. xxiii.

<sup>2</sup> Bain, *Mental and Moral Science*, p. 457 ff.

<sup>3</sup> *Cours d’Histoire de la Philosophie Moral*, 1re leçon.

brings him back to a criterion which is ultimately internal.

Mansel says: "An act of duty is presented to my consciousness as enjoined by a law whose obligation upon myself is directly and intuitively discerned. It thus differs essentially from the phenomena of external nature, whose laws are not immediately perceived, but inferred from the observed recurrence of facts. The immediate consciousness of law unavoidably carries with it the conviction of necessity and immutability in relation to the agent who is subject to it. . . . The moral sense is thus, like the intuitions of time and space, an *a priori* law of the human mind, not determined by experience as it is, but determining beforehand what experience ought to be."<sup>1</sup> A score of writers might be quoted to the same effect, but none speak plainer than the last.

We reach the final stage of our critique. Two distinct interrogations have been before us. We have passed from one to the other, interweaving the two as though they were of equal importance to us. (1.) Have we an innate faculty which immediately approves or disapproves without reference to consequences? (2.) What constitutes the distinction between right and wrong? Or (1.) The nature and origin of the sentiment; (2.) The nature of the acts upon which the sentiment is exercised. The first of these is the one with which "natural selection" is concerned; the second has served only to elucidate it. If the moral sense is not a product of experience in the widest acceptance of this term, it is not satisfactorily explained by evolution. I have striven to show that utility, in its widest sense, including both the good and the happiness of all concerned, is the criterion of morality. If this is so, there is a strong presumption that the moral sense is derivative, not innate. But remember,—and this is the drift of the whole discussion,—only so far as utility is admissible in explanation of our moral nature, to that extent, and no farther, can we admit of natural selection as its

<sup>1</sup> *Bampton Lectures*, sect. vii.

evoking principle. Will utility account for every kind of moral and virtuous action and emotion? Will psychological chemistry reduce self-sacrifice and prudence to common elements? Will association account for sympathy? If not, how will it account for benevolence? Have the intuitionists no truth on their side?

If we try to get at simple motives, we are baffled on every side by complexity. Every moral act, to begin with, must be self-regarding. "It is impossible to have any feelings out of one's own mind;" and most moral acts are compounds of interest and disinterest. The difficulty of unravelling the entanglement is nearly insuperable, especially where association has welded complex motives into homogeneous habit. It depends, too, on a man's idiosyncrasy whether, in any question, his judgment will be swayed more by reason or by feeling. According to his constitutional bias, will he be inclined to push analysis to extremes or not. By far the majority of men prefer to stop short of unpleasant discovery; and for this reason, perhaps, refuse to believe that, what seems disinterested is really not so. Be that as it may, much of the disagreement is due to the nice shades of distinction which at once separate and unite virtue and morality. Conscience is an extremely complicated phenomenon. "As it exists, the simple fact is all encrusted over with collateral associations, derived from sympathy, from love, and still more from fear; from all the forms of religious feeling; from the recollections of childhood and of all our past life; from self-esteem, desire of the esteem of others, and occasionally even self-abasement."<sup>1</sup> Now, most of these elements of conscience may be traced to self-interest. But it is not so easy to see how self-interest can be the original source of all. For my part, I believe that what is generally understood by the moral sense is artificial; that there is no fundamental distinction between "right" and "useful," or between "duty" and "interest." Nevertheless I can quite under-

<sup>1</sup> J. S. Mill, *Utilitarianism*, p. 42.

stand an impartial inquirer looking upon self-sacrifice as *sui generis*; and he might not unreasonably argue as follows:—‘ We hear self-sacrifice called a moral act, and chastity a virtue. Justice and benevolence are indifferently spoken of as virtuous or moral. But is not this kind of language misleading? Are not these essentially different? I might perhaps be disposed to admit that chastity and justice are fruits of utility, since I cannot deny the utility of their ends. But self-sacrifice appears to me to root in sympathy. Whether it does or not, you surely will not tell me that a principle, which is destructive of its subject, is to be brought under the dominion of another principle which preserves only what is useful to its subject? I suppose you will maintain, the seeming incongruity is swamped by the fact that the subject in the latter case is the community or tribe. All I can say is, the difficulty is at least as great as that of the sterile ants; and Darwin himself allows that he comes lamely out of that.’

Whether there be a radical distinction or not, it is one thing to fall into confusion through not heeding it, and quite another and much stranger blunder to deny such a conspicuous fact as Sympathy, altogether. Yet some thinkers have assigned it no place amongst the incentives to virtue. “All other virtues,” said Epicurus, “grow from *prudence*; which teaches that we cannot live pleasantly without living justly and virtuously, nor live justly and virtuously without living pleasantly.” “Man,” says Mandeville, “centres everything in himself, and neither loves nor hates but for his own sake.” “La plus haute vertu,” says Helvetius, “comme le vice le plus honteux, est en nous l’effet du plaisir plus ou moins vif que nous trouvons à nous y livrer.” The virtuous man is not he who sacrifices his pleasures, his habits, and his strongest passions to public interest, since such a man is impossible; but he whose strongest passion so conforms to the general interest that he is nearly always irresistibly impelled to be virtuous—*nécessité à la vertu*.

In spite of such writers, sympathy is a fact, and calls for explanation. Darwin, as we have seen, holds that a well-marked social instinct is all that is necessary to the building up of a Conscience. But can we churn genuine Sympathy out of the social instinct? I say genuine, because I shall presently show there is sympathy and sympathy. Then, as first observed, there is certainly something in self-sacrifice which the moral sense—the mere arbiter of right and wrong—is not conversant with.

“Almost every passion in its turn prevails over self-love.”<sup>1</sup> Malevolence does not consult interest: why should benevolence? One is quite as natural as the other. But malevolence, being hurtful to one and all, would not be evoked by selection. And if malevolence be inherent, why not benevolence? Hume, noticing this disregard of self-interest, says, “Compelled by these instances, we must renounce the theory which accounts for every moral sentiment by the principle of self-love. We must adopt a more public affection, and allow that the interests of society are not even on their own account entirely indifferent to us. Usefulness is only a tendency to a certain end; and it is a contradiction in terms that anything pleases as a means to an end where the end itself no wise affects us.”<sup>2</sup>

Such bald assertions as those of Mandeville and Helvetius can hardly, I should suppose, be intended to imply, (what the Intuitionists seem to think all Utilitarians hold) that morality means *conscious* reference to self-interest. If there were no other means of refuting so absurdly false a notion as this, it would be easy to show that conscious reference would frustrate its own end. This has been forcibly pointed out by Mr. Sidgwick, who remarks: “many important pleasures can only be felt on condition of our experiencing desires for other things than pleasure. Thus the very acceptance of pleasure as an ultimate end

<sup>1</sup> Cf. Sir James Mackintosh, *Ethical Philosophy*, sect. v.

<sup>2</sup> *Why Utility Pleases*, part ii.

of conduct involves the practical rule that it is not always to be made the conscious end.”<sup>1</sup> But it seems waste of time to support by argument so familiar a fact as the immediate flash of sympathy in the presence of its appropriate objects. The only debatable point is, not whether this emotion is regardless of present self-interest and often opposed to it, but, *whether it could have grown out of self-love or utility*, and hence could ever have been affiliated by Selection.

If we look to the lower animals for enlightenment, we see evidence of sympathy as tender and as heroic as our own. Take, for example, Darwin’s touching instances of devoted heroism in the little American monkey who saved the life of his keeper at the Zoological Gardens from the fierce attacks of “a great and dreaded baboon;” or the still more gallant act of the old baboon who faced rifles and dogs to rescue a forsaken and helpless member of his band. This last act is precisely of the kind which on the battlefield we reward with the Victoria Cross. In the case of the monkey (though seldom perhaps of the hero) it is one of genuinely disinterested sympathy. Take the following illustration from a popular book of travels:—“As we were riding along, the dogs found and killed a bizcacha in a bank. Just as Mr. Elliot had pulled it out and laid it dead in the field, its little companion owl arrived, and appeared to be in the most dreadful state of mind. It shrieked and cried as it hovered over us, and finally selected a small white fox terrier, who, I think, really had been principally concerned in the death, as the object of its vengeance, pouncing down upon its head, and giving him two or three good pecks, at the same time flapping its wings violently.” Driven off by the other dogs, “it again swooped down upon the *same* dog with a dismal cry, and administered a vigorous peck to him.”<sup>2</sup> I myself have been almost attacked in a similar way by

<sup>1</sup> *The Method of Ethics*, book iii. chap. xiv.

<sup>2</sup> Mrs. Brassey’s *Voyage of the Sunbeam*.

these little owls for shooting a prairie-dog or barking marmot in the prairies of North America. It is a matter of common observation that birds will pine, even to death, at the loss of their mates; and people who live in the country will often have noticed old birds courting danger, by fluttering along the ground to decoy the enemy from their nest or brood. This disregard by the lower animals for their own safety when their young are endangered, was cited by Grotius in answer to the interested-morality theory of Carneades. At first sight, it does seem improbable that natural selection should preserve the kind of baboon which would immolate itself for the sake of a comrade, or the kind of owl that braves destruction to avenge a friend.

Still, the reply of the evolutionist, previously suggested, must not be ignored. It is as natural, he might retort, to like, to cherish, to attach oneself to *any* being that contributes to one's enjoyment, as it is to hug the blanket that keeps one warm. The pleasures and pains of such a being react mediately upon self, not through sympathy, but ultimately through the benefits which depend upon that being's welfare. The laws of association would soon convert an interested feeling into a disinterested one. The security and general advantages gained by the herding propensity would certainly bring it under the influence of selection; and the social instinct once established, self-interest might, in this way, do the rest. The aphorism of Helvetius, "Aimer c'est avoir besoin," might thus be borne out; and the paradox that we sometimes brave death because we fear it, may not be so false as it sounds.

Suppose, however, self-love be abandoned as the basis of the social affections; suppose, for the moment, the evolutionist surrenders this point, or even, like Darwin, repudiates it, it does not follow then that sympathy may not have grown out of utility; and this is all Darwin wants. For, in identifying the moral sense with the social instincts (in which he includes sympathy), he explains

that, in calling forth these instincts, natural selection would operate for the good of the community. They would be developed, not from "selfishness or from the happiness of the community," but "for the general good of the community." Selection would act as in the case of the sterile ants. Nor can it be doubted, in spite of Mr. Mivart's point about self-immolators, like the chivalrous baboon and gallant little owl, that those communities which included the greatest number of sympathetic members would flourish best and rear the greatest number of offspring.

Yet even now, the path is not quite smoothed for the evolutionist. We may grant that the safety, and the finding of food, and the facilities of propagation, &c., which would be gained by herding would promote the social instincts, or, in other words, the desire to herd. We may also grant that, the social affections originate in the parental and filial affections, and are developed by means of the social instincts. Finally, that, being derived from blood ties, they originally root in interest or utility. Admitting all this, there is yet a residue unaccounted for.

There are two kinds of sympathy; at least there is a mixed sympathy and a pure sympathy. Darwin has commented on the distinction between sympathy and love.<sup>1</sup> A mother's love for her infant, he says, is not sympathy. That is true. But when a mother sees her infant suffer, her feelings are compounded of love *and* sympathy. This is a feature in the case which I hardly think Darwin sufficiently recognises. It appears, moreover, to escape him that this feature is precisely the one which (if any does so) somewhat adversely affects his theory. He notices the doctrine of Adam Smith and Mr. Bain, "that the basis of sympathy lies in our strong sensitiveness of former states of pain or pleasure;"<sup>2</sup> and adds, "But I cannot

<sup>1</sup> *Descent*, part i. chap. iii.

<sup>2</sup> This after all, is pretty much the same as Hobbes's, "Pity is but the imagination of future calamity to ourselves, produced by the sense

of another man's calamity." But neither Hobbes nor Adam Smith gave such profound reasons for thinking so as Mr. Bain has given us.

see how this view explains the fact that sympathy is excited in an immeasurably stronger degree by a beloved than by an indifferent person. . . . It seems now to have become an instinct which is especially directed towards beloved objects, in the same manner as fear with animals is especially directed against certain enemies." I confess this puzzles me, coming from so astute a thinker as Darwin. If it were true, sympathy would be emptied of its essential characteristic—disinterestedness.

"It is admissible to lay down, as a general law, that the sight of misery in others prompts us, irrespective of our own interests, to enter into and to relieve that misery." "The pity that we often extend to enemies and to criminals is a case in point."<sup>1</sup>

Sympathy proper is, I contend, as strongly directed towards indifferent as towards beloved objects. This is as clearly evinced by the person who jumps overboard to save a stranger's life as it is by the person who faints at the sight of a surgical operation. For the same reason the sight of misery sometimes provokes irritability of temper and impatience with the suffering which excites the sympathy. Goethe turned from distress with as much aversion as pity. The suggestion of a feeling tends to produce it. A dog seeing two dogs fight is almost sure to attack one or the other. It is the same with stags, and is common throughout the animal kingdom. So, laughter excites laughter, though the joke be not apprehended. One yawn in a company starts others. A melancholy countenance is "a wet blanket." A mother told me the other day, that her child (contemplating some innocent crime in her story-book) exclaimed, "Mamma, I feel so naughty, I think I had better be sent up to the nursery." This is precisely the mental condition which impels people to cast themselves from a height; and leads to a large class of crimes which are not uncommonly explained as "instigations of the devil."

The true explanation of the state of mind here referred

<sup>1</sup> James Mill's *Analysis*, &c. ; Mr. Bain's note, chap. xxiii.

to and which enters so fully into all kinds of sympathy is, that it is a phase of imitation. The idea of a state tends to realise itself in expression. In his instructive chapter on "Sympathy and Imitation,"<sup>1</sup> Mr. Bain has set this forth with his usual lucidity. The two important laws in the sympathetic process are, "*the tendency to assume a bodily state, attitude, or movement that we see enacted by another person;*" and, "*the assumption of the mental state of consciousness through the occurrence of the bodily accompaniment.*" Mr. Bain remarks, "If the entire physical condition accompanying any feeling could be aroused any how, the feeling itself would co-exist." We have here a physiological explanation, or rather description, of sympathy, from which we learn that the emotion is purely automatic.<sup>2</sup> It comes into play "without a thought of reciprocity or reward;" and, more than this, without a thought of the relationship of the object to ourselves. "To resolve it into selfishness on the ground of certain indirect results of a pleasurable kind, is to abolish it as a fact of human nature and deny the reality of disinterested action."<sup>3</sup>

Here we must leave sympathy for a moment; for we have still to attend to the teaching of Mr. Spencer. His "DATA OF ETHICS" treats in the fullest manner of the subject under discussion; reference to it is therefore imperative. As a review here of this crowning work of his great system, within anything like suitable limits, is out of the question, I will simply notice a few passages connected with the arguments already handled.

The great point that Mr. Spencer insists upon, and which no one has hitherto recognised, is the dependence

<sup>1</sup> *The Emotions and the Will*, chap. xii.

<sup>2</sup> A curious question here suggests itself, viz., Whether this same law of imitation applies to the chameleon's power of changing its colour: whether this power, like the imitative tendency above referred to, is invo-

luntary: and whether the adoption by animals of the colours and forms of their surroundings (discussed under the head of Imitation) illustrates some wider law, under which the sympathetic process may be brought?

<sup>3</sup> *Ubi supra*, p. 181.

of ethical laws upon the laws of life. By so doing he has made good his position from the standpoint of evolution; for he has shown clearly (as I think) that the evolution of conduct consists in the adjustment of acts to *all* the ends of life, be they physical, biological, psychological, or sociological. Thus while "imperfectly evolved" conduct necessitates antagonism or struggle for existence, the highest moral conduct implies a harmony of existence that enables each sentient creature to perfect his own adjustment consistently with a like perfect well-being of all other creatures

By a superfluity of instances, it is proved that "acts are called good or bad according as they are well or ill adjusted to ends." "Upon examination it is found that conduct to which we apply the name of good, is the relatively more evolved conduct, and that bad is . . . less evolved."<sup>1</sup> By anticipation, therefore, the dispute about interested or disinterested is settled *ab initio*. Self-preservation, whether consciously or unconsciously pursued, is the *beginning* of conduct. "A creature must live before it can act." Hence the physical view of ethics presents us with a process expressible in terms of matter and motion; for "evolution in conduct, considered under its moral aspect, is like all other evolution towards equilibrium."<sup>2</sup> Advancement is from indefinite to definite movements; from the random movements of an animalcule to the finished skill of industrial art.

From physical, we pass to biological, ends. In opposition to the pessimistic view of life, Mr. Spencer takes it for granted that life *is* worth living; that "a life which is at once wider and longer" is a desirable end; consequently that "conduct is to be judged by its conduciveness to this end." Here the argument is copiously enforced by the advantages to self and others of a sound body, without which the healthy mind is unattainable. Restraint and moderation in appetites and pursuits, culture of cheerful-

<sup>1</sup> *Data, &c.*, p. 25.

<sup>2</sup> Page 71.

ness, the bequeathment of a sound constitution, being notable amongst biological virtues, so to speak.

In his chapters on the psychological and sociological views, Mr. Spencer treads upon ground we have already explored. He affirms, of course, that the sense of duty or moral obligation is purely derivative; mutual dependence necessitates subordination of personal to social welfare. And "only after political, religious, and social restraints have produced a stable community, can there be sufficient experience of the pains, positive and negative, sensational and emotional, which crimes of aggression cause, as to generate that moral aversion to them constituted by consciousness of their intrinsically evil results."<sup>1</sup>

The immediateness of the moral judgment blinds us to causal connections, and leads to the belief in absolute and eternal principles of right and wrong, and also in innate powers enabling us to distinguish one from the other. The question raised above, whether the intuitionists had no truth on their side, is answered by the doctrine that the intuitive perception is partly due to our own experiences, but perhaps more so to "the effects of pleasurable and painful experiences in progenitors" *rendered organic by inheritance*. The application of heredity to mental phenomena, is one of Mr. Spencer's most valuable contributions to modern philosophy. In his well-known letter to John Mill this important amplification of Des Cartes's doctrine is set forth with his wonted clearness and precision. Its profound consequence to the whole *a priori* controversy, as also to the matter in hand, justifies its quotation in full: "There have been, and still are, developing in the race certain fundamental moral intuitions; and . . . though these moral intuitions are the results of accumulated experiences of utility gradually organised and inherited, they have come to be quite independent of conscious experience. Just in the same way that I believe in the intuition of space, possessed by any living

<sup>1</sup> Page 122.

individual, to have arisen from organised and consolidated experiences of all antecedent individuals who bequeathed to him their slowly developed nervous organisations—just as I believe that this intuition, requiring only to be made definite and complete by personal experiences, has practically become a form of thought apparently quite independent of experience; so do I believe that the experiences of utility organised and consolidated through all past generations of the human race have been producing corresponding nervous modifications, which by continued transmission and accumulation have become in us certain faculties of moral intuition—certain emotions responding to right and wrong conduct, which have no apparent basis in the individual experiences of utility.”

To return now to the question whether the spontaneous sympathy which leads to self-sacrifice is or is not satisfactorily explained by evolution. Under the guidance of Mr. Spencer there seems to be no alternative but to relinquish the alluring thought of anything exceptional in the nature of sympathy which could enable us in turn to rescue self-sacrifice from the clutches of evolution, and ascribe it to some origin less discordant with our old beliefs or present wishes.

It must not be supposed that Mr. Spencer ignores sympathy of the most genuine kind. “In the truly sympathetic,” he says, “attention is so absorbed with the proximate end, others’ happiness, that there is none given to the prospective self-happiness which may ultimately result.” But what is the analogous instance here cited? The accumulation of money by a miser. The act of hoarding, not its consequences, is the source of pleasure. And as the uses of money first engendered the love for itself, so the purest altruism or disinterested conduct which benefits others at the expense of self, is referable to egoism—in such a sense, at least, as to bring it under the agency of selection.

Tracing it backwards, its true origin becomes more and more palpable. The sympathy of the aged or of parents with the young means that, "as the egoistic satisfactions in life fade, altruism renews them while it transfigures them."<sup>1</sup> Sympathy with the sick, &c., also betrays an egoistic element in an altruistic pleasure. However spontaneous the sympathy now, it would originally be apprehended by very low forms of intelligence that the bodily ill-being of one's fellow creatures "when it takes certain shapes [such as small-pox, typhus, plague, and so on] is apt to bring similar ill-being on him."<sup>2</sup> Going back step by step till we reach the maternal instinct, than which nothing can be conceived as more disinterested, we find that the bringing forth and rearing of offspring necessarily involves self-sacrifice; so that with or without the co-operation of the will—with or without option—life could not have been perpetuated save for the law of sacrifice. The necessity of practising it, combined with the advantages incident to so doing, would, in consonance with known mental laws and the principle of heredity, convert it into an automatic affection of animal nature. "Self-sacrifice, then, is no less primordial than self-preservation. Being in its simple physical form absolutely necessary for the continuance of life from the beginning, and being extended under its automatic form as indispensable to maintenance of race in types considerably advanced, and being developed to its semi-conscious and conscious forms, along with the continued and complicated attendance by which the offspring of superior creatures are brought to maturity, altruism has been evolving simultaneously with egoism."<sup>3</sup>

Unwilling as we may be to give in to the conclusions here reached, irresistible as they must seem, they are yet further strengthened by another consideration, which, so far as I know, had never occurred to any other thinker. "That pure altruism is suicidal may be yet otherwise demonstrated. A perfectly moral law must be one which

<sup>1</sup> Page 213.

<sup>2</sup> Page 209.

<sup>3</sup> Page 203.

becomes perfectly practicable as human nature becomes perfect. If its practicableness decreases as human nature improves, and if an ideal human nature necessitates its impracticability, it cannot be the moral law sought."<sup>1</sup> This is at once subtle and profound; for it is evident, as Mr. Spencer proceeds to set forth, that "as fast as men adapt themselves to the requirements of social life, so fast will the demands for efforts on their behalf diminish." Finished adaptation would dispense with the need of altruism. Of course, no such stage can ever be reached while death remains a law of nature. But, as Mr. Spencer has made clear, so far from sympathy becoming inert with the progressive movement of evolution, it is only when evolution has reached a certain stage of advancement that sympathy comes into play. "If the life usually led under given social conditions is such that suffering is daily inflicted or is daily displayed by associates, sympathy cannot grow; to assume growth of it is to assume that the constitution will modify itself in such way as to increase its pains and therefore depress its energies; and is to ignore the truth that bearing any kind of pain gradually produces insensibility to that pain as callousness."<sup>2</sup> "Gradually, then, and only gradually, as these various causes of unhappiness become less, can sympathy become greater."<sup>3</sup>

It might seem as if there were some contradiction in stating, first, that altruism is suicidal and becomes less practicable as human nature becomes perfect, and then that its practicableness depends on advancement towards perfection. Nevertheless both propositions may be maintained; for while it is true that demands for altruism diminish, it is also true this very diminution in the demand favours the adequacy of the supply.

Nothing, then, can be made out against the theory of selection on the score of our moral nature. As to the argument that benevolence is an ultimate property because malevolence appears to be so, or that one has originally

<sup>1</sup> Page 230.<sup>2</sup> Page 244.<sup>3</sup> Page 246.

no reference to pleasure or utility because the other seems to have none;—do not envy, hatred, and malice, and all uncharitableness spring from real or imagined interference with self-interest? And though these evil passions are not conducive to well-being, they are certainly indulged for the sake of present pleasure.

If, as a last protest, an adversary objects that the evolutionist has no right to assume that man was ever in such a primitive or undeveloped state as to render this evolutionary theory of his moral nature a probable and legitimate one—that he may not assume evolution to account for evolution—this is not exactly the situation. The theory of man's organic development from lower grades is a perfectly rational one, as accounting for many otherwise inexplicable phenomena. Besides which, it is vindicated by presumptive evidence that would go a long way to prove a more acceptable hypothesis. If this much be admitted, there is no reasonable ground for denying that the same process of selection would produce man's mental and moral nature.

## LETTER XIV.

UNDER the general head Efficiency, one sub-objection remains to be noticed before we take in hand the last and perhaps most important on our list—Transmission or Heredity. The odds against the survival of the fittest were first made evident by Professor Tait in the essay already referred to. His case is, that “the advantage, whatever it may be, is utterly outbalanced by numerical inferiority.”

Darwin does full justice to this argument, which is maintained with great ingenuity. “I saw,” he admits, “that the preservation in a state of nature of any occasional deviation of structure, such as a monstrosity, would be a rare event, and that, if at first preserved, it would generally be lost by subsequent intercrossing with ordinary individuals. Nevertheless, until reading an able and valuable article in the ‘North British Review’ (1867), I did not appreciate how rarely single variations, whether slight or strongly marked, could be perpetuated.”<sup>1</sup>

How is this to be met? There can be little doubt, we are told, “that the tendency to vary in the same manner has often been so strong, that all the individuals of the same species have been similarly modified without the aid of any form of selection.” This would naturally result from similar organisations being similarly acted on, and the counteracting effects of intercrossing would be mitigated by animals and plants keeping to their own homes. “Consequently each newly formed variety would generally be at first local, as seems to be the common rule with varieties in a state of nature, so that similarly modified

<sup>1</sup> *Origin*, &c., p. 71.

individuals would soon exist in a small body together, and would often breed together." This is all very true. But Darwin does not pretend that every species originates thus, by the similar modifications of a number of individuals simultaneously. Indeed, if this were the case, it would be "without the aid of any form of selection." No; we are entitled, I think, to bind the selectionist down to "single variations," and ask how by his theory these are perpetuated.

The difficulty is rather an awkward one, for it is doubly posing,—first, on its own account; secondly, through its connection with *fitful* evolution. Professor Tait appeals to the doctrine of chance. "A million creatures are born; ten thousand survive to produce offspring. One of the million has twice as good a chance as any other of surviving; but the chances are fifty to one against the gifted individuals being one of the hundred survivors."

Now, if an organism steps into being fully equipped with a new or improved organ, the chances for or against the transmission of this organ depend mainly on the subsequent amount of intercrossing. If, on the contrary, the organ has to be perfected by minute and slow changes, it stands a still worse chance of being perpetuated. The odds are incomparably greater against single variations when slight, than when strongly marked. But the chances against the survival of the latter even are acknowledged by Darwin to be very great. How much greater then are they against slight improvements, especially where, as in the case of complete organs, many changes are requisite before the improvement is effected.

Would the frequent occurrence of strongly marked single variations mend matters? Quite the reverse. Far from lessening the difficulty, this presents us with a new one. Evolution, by means of selection proper, may not avail itself of jumps. It is strictly tied to minute deviations, and these must radiate from individual centres. Yet, whether it suits Darwinism or not, jumps do occur; at least "sports" and monstrosities frequently occur.

And what are these but strongly marked single variations? Darwin describes a monstrosity as "some considerable deviation of structure, generally injurious, or not useful to the species."<sup>1</sup> This definition serves well enough for general purposes; it serves when the term is applied to aborted organs and arrested developments of all kinds. But is not "monstrosity" sometimes synonymous with "sport?" And is not a "sport" a sudden variation? And do not sudden variations, when strongly marked, constitute fitful evolution? "Monstrosities graduate so insensibly into mere variations, that it is impossible to separate them."<sup>2</sup> Take the stock case of the Ancon sheep. A ram-lamb is born with crooked legs and a long back, like a turnspit-dog. The farmer, finding the animal cannot leap fences, breeds from it; and so faithfully does the ram transmit its peculiarities (when artificially aided), that a genuine species is established. Darwin calls this a semi-monstrous breed.

Another instance. A Maltese couple beget a son, Gratio, with six fingers on each hand and six toes on each foot. Gratio marries a woman with ordinary members, and begets a son, Salvator, with six fingers and six toes. Salvator marries an ordinary woman, and of four children three have hexadactyle members. There the variety, which was originally a monstrosity or a sport, comes to an end. It can hardly be doubted that had selection stepped in—had six fingers and six toes been advantageous—we should have now had a distinct variety of human beings with hexadactyle limbs.

Take the case of bud-variation. "Each bud," says Darwin, "is, in one sense, a new and distinct individual." He objects to the term "sport" as applied to mere bud-variation, only, however, because "it has often been applied to strongly marked variations in seedling plants." But if the bud is a new individual, the objection does not affect us here. He then says, "Many cases of bud-variation

<sup>1</sup> *Origin*, &c., p. 33.

<sup>2</sup> *Animals and Plants*, &c., chap. xxii.

tion . . . cannot be attributed to reversion, but to so-called spontaneous variability, as is so common with cultivated plants raised from seed. As a single variety of the chrysanthemum has produced by buds six other varieties, and as one variety of the gooseberry has borne at the same time four distinct kinds of fruit, it is scarcely possible to believe that all these variations are due to reversion."<sup>1</sup> The nectarine is a bud-variety of the peach; the moss-rose of the Provence. Five varieties have been produced in the same way from the Baronne Prevost, &c.

Whether we say, "The advantage given by the 'sport' is retained by all the descendants, *independently* of what, in common speech, might be called the proportion of blood in their veins directly derived from the first sport, then these descendants will shortly supplant the old species entirely;" or say, the "sport" supplants the old species, only when the blood is kept "true" by breeding,—we may equally exclaim with Professor Tait, "But this theory of the origin of species is surely not the Darwinian theory, and simply amounts to the hypothesis that, from time to time, an animal is born differing appreciably from its progenitors, and possessing the power of transmitting the differences to its descendants. What is this but stating that from time to time a new species is created. . . . The word [created] being used to express our ignorance of how the thing happened."<sup>2</sup> "The substitution of the new specimens, descendants from the old species, would then be simply an example of a strong race supplanting a weak one by a process known long before the term 'natural selection' was invented."<sup>3</sup>

Darwinians do not need to be told this. Therefore is it that they so repeatedly emphasise the principle of graduality. You remember how strongly Darwin has expressed himself: "If it could be demonstrated that any complex organ existed which could not possibly have been formed

<sup>1</sup> *Ubi supra*, vol. i. p. 439.

<sup>2</sup> *North British Review*, vol. vii. p. 292.

<sup>3</sup> *Ibid.*

by numerous successive slight modifications, my theory would absolutely break down.”<sup>1</sup> You remember how clearly Dr. Huxley has expressed himself: “This hypothesis postulates that the existence of every form must have been preceded by that of some form little different from it.” And Professor Häckel: “Every process of evolution as such is always continuous, and real leaps or interruptions never occur. *Natura non facit saltum*—Nature never leaps. This is true both of ontogenetic and of phylogenetic processes; of the evolution of the individual as well as of that of the species.”<sup>2</sup>

How, then, do these high authorities propose to dovetail such avowals with cases seemingly so incongruous with them? How can Dr. Huxley’s statement be made to quadrate with this other: “We greatly suspect that she [Nature] does make considerable jumps in the way of variation now and then, and that these saltations give rise to some of the gaps which appear to exist in the series of known forms?”<sup>3</sup> Or with this third still bolder affirmation: “Varieties then arise, we know not why; and it is more than probable that the majority of varieties have arisen in this ‘spontaneous’ manner”?<sup>4</sup>

So far as evolution is concerned, the following explanation saves the consistency of these writers:—“In those extreme cases where a form does indeed seem to come into existence quite suddenly, as in what is called ‘sudden or monstrous adaptation,’ there is always under the surface an unbroken physiological evolutionary process, which has the appearance of being a ‘sudden leap’ only because of its comparative rapidity or of the magnitude of its results.”<sup>5</sup> So, too, when Darwin concedes that he “formerly underrated . . . the frequency and importance of modifications due to spontaneous variability,” this means that whereas he at one time attributed variation mainly to external causes,

<sup>1</sup> *Origin*, &c., p. 146.

<sup>3</sup> *Lay Sermons*, p. 312.

<sup>2</sup> *The Evolution of Man*, vol. i. p.

<sup>4</sup> *Ibid.*

<sup>5</sup> Häckel, *ubi supra*.

he got to think more of the internal. That is to say, he thought variability to be due to the conditions of life, but believed the particular modification to be determined by the constitution of the being itself.<sup>1</sup> As touching evolution no exception can be taken to this, but (*quantum valeat*) it puts selection, as an initiatory principle, out of court. Does it not let the teleologist in? This will be seen to immediately. Enough for the moment to note that, selection has nothing whatever to do with the origin of species that start from monstrosities, sports, or jumps. In all such sudden adaptations the evolutionary process goes on "under the surface," or is due to the constitution of the being itself; and inasmuch as it is admitted that selection never does or can operate until change has taken place, this brings every variation under one and the same category; the only difference being that one deviation is slight and another strongly marked. Or, to put it in another way, every new form is a slight variation or a sudden leap, according as we look at it with the naked eye or with a microscope. It is a mere question of magnitude.

But if Darwin claims no efficiency for natural selection,—which he certainly does not; and if our final conclusion tallies with that of Professor Hæckel and Dr. Huxley,—which it certainly does; what is the *casus belli* between such evolutionists as Mr. Mivart or the Duke of Argyll, say, and the Darwinians? The whole dispute is about teleology, and the differences of opinion may be as nicely blended as the hues of the rainbow, or as widely parted as the ends of its arc.

Between the last two writers and the two founders of the theory of natural selection, upon this score I can find no disagreement worth noticing. Between Dr. Huxley and Mr. Mivart the chief difference seems to be that the latter confidently asserts what the other (somewhat niggardly perhaps) concedes. "When Mr. Mivart tells us that his 'aim has been to support the doctrine that these spe-

<sup>1</sup> Cf. *Animals and Plants*, &c., chaps. xxii. to xxvi.

cies have been evolved by ordinary *natural laws* (for the most part unknown), aided by the subordinate action of natural selection,' he seems to be of opinion that his enterprise has the merit of novelty. All I can say is, that I have never had the slightest notion that Mr. Darwin's aim is in any way different from this. If I affirm that 'species have been evolved by variation (a natural process, the laws of which are for the most part unknown), aided by the subordinate action of natural selection,' it seems to me that I enunciate a proposition which constitutes the very pith and marrow of the first edition of the 'Origin of Species.'"<sup>1</sup>

Nevertheless Mr. Mivart is not fighting with a mere shadow. His charge against natural selection may be against this theory as misinterpreted; still the misinterpretation is one which fully merits hostile criticism. His view (as I understand it) is that natural selection assumes, or rather *ought* to assume, minute, indefinite, and *fortuitous* variation in *all* directions. Its advocates do not avowedly make this assumption, and deny that it is incumbent upon them to make it, because development, especially in complex organs, would then be so extremely improbable. Notwithstanding, *in the absence of everything of the nature of a guiding principle*, the marvellous diversity, complexity, and fitness of the organic world could not be accounted for unless indefinite variation be held to prevail;—variation must then be in all directions, otherwise there would be no reason why it should occasionally be in the right one, or why selection should so often come into play.

If every evolutionist were content to say: I reject indefinite variation because I do recognise a guiding principle. I recognise the fact that organic evolution is the resultant of internal and external forces. My guiding principle is the law of equilibration, and I fully agree with Mr. Mivart that new forms "build themselves up according to the laws of their component substance, and

<sup>1</sup> *Critiques and Addresses*, p. 299.

in harmony and correspondence with all environing influences and conditions;”—if he were content to stop here, Mr. Mivart would certainly have no case, nor would his enterprise have the least merit of novelty. But the passage above criticised concludes thus: “And at the same time to remind some readers that there is and can be nothing in physical science which forbids them to regard those natural laws as acting with the Divine concurrence, and in obedience to a creative fiat originally imposed on the primeval cosmos ‘in the beginning’ by its Creator, its Upholder, and its Lord.”<sup>1</sup> It is not the process which Mr. Mivart calls in question, but the interpretation of it. The results are not produced by any blind conatus of Nature, but designedly.

Here is the raw place in the controversy. I qualified Dr. Huxley’s concession to teleology as somewhat equivocal. Yet will it be seen from the following passages that (whether reluctantly or not) he grants everything which a teleological evolutionist can possibly ask for. To be sure, he repeats more than once that teleology, as commonly understood, has received its death-blow at Darwin’s hands. But if “commonly understood” means that the first woman was made out of the first man’s rib, or that animals were modelled in clay as figures are made of gingerbread, it surely did not need the costly apparatus of the Darwinian theory to knock this poor archaic moribund on the head. “Nevertheless it is necessary to remember that there is a wider teleology, which is not touched by the doctrine of evolution, but is actually based upon the fundamental proposition of evolution. That proposition is that the whole world, living and not living, is the result of the mutual interaction, according to the definite laws, of the forces possessed by the molecules of which the primitive nebulousness of the universe was composed.”<sup>2</sup> So far there is no equivocation. Mr. Mivart and Dr. Huxley are at one, and although, in the thoroughly philosophical reflec-

<sup>1</sup> *Genesis of Species*, p. 333.

<sup>2</sup> *Critiques*, &c., p. 305.

tions which follow, suspension of judgment is recommended, the worst that can be said of them is, they do but wipe the bloom off the plum.

The universe is compared with a clock. "Now let us suppose a death-watch, living in the clock-case, to be a learned and intelligent student of its works. He might say, 'I find here nothing but matter and force and pure mechanism from beginning to end;' and he would be quite right. But if he drew the conclusion that the clock was not contrived for a purpose, he would be quite wrong. On the other hand, imagine another death-watch of a different turn of mind. He, listening to the monotonous 'tick! tick!' so exactly like his own, might arrive at the conclusion that the clock was itself a monstrous sort of death-watch, and that its final cause and purpose was to tick. . . . Thus the teleologist would be as wrong as the mechanical-theorist among our death-watches; and probably the only death-watch who would be right would be the one who should maintain that the sole thing death-watches could be sure about was the nature of the clock-works and the way they move, and that the purpose of the clock lay wholly beyond the purview of beetle faculties. . . . The teleological and the mechanical views of Nature are not necessarily mutually exclusive. On the contrary, the more purely a mechanist the speculator is, the more firmly does he assume a primordial molecular arrangement, of which all the phenomena of the universe are the consequences; and the more completely is he thereby at the mercy of the teleologist, who can always defy him to disprove that this primordial molecular arrangement was not intended to evolve the phenomena of the universe. On the other hand, if the teleologist assert that this, that, or the other result of the working of any part of the mechanism of the universe is its purpose and final cause, the mechanist can always inquire how he knows that it is more than an unessential incident—the mere ticking of the clock which he mistakes for its function. And there seems to be no

reply to this inquiry, any more than to the further not irrational question, why trouble oneself about matters which are out of reach, when the working of the mechanism itself, which is of infinite practical importance, affords scope for all our energies?"

The concluding sop to Scientism seems to me quite unworthy of the writer. Dr. Huxley cannot think, whatever the Positivists may, that man's practical energies exhaust the sum of his being. Man troubles himself about matters which are out of his reach, simply because they are out of his reach, and because it will always be his fate so to trouble himself long after Positivism and legions of its successors have been swept into the dust-bin of all our sapient creeds.

The influence of Dr. Huxley is so widely spread that, I do not apologise for dwelling upon his teachings where these go to the very pith of the great subject we have in hand: and it is pertinent to observe that, amongst the crowds who read his essays, there must be a large proportion who understand and accept the shallowest only of his truths. Perhaps hardly any living writer has contributed so much to the common scepticism,—the crass unbelief of the day (here at home), as Dr. Huxley. Yet this is rather the misfortune of the ignorant pupils than the fault of the brilliant teacher. True, he seems to be imbued with an intense *odium scientificum* for theologians. The imaginary presence of a theologian amongst his audience or his readers is scarlet for the horns of his piercing speech. This unfortunate, and the like of him, must forthwith be gored. It is with grim satisfaction he exclaims, "Extinguished theologians lie about the cradle of every science, as the strangled snakes beside that of Hercules." But those for whom Dr. Huxley is a Gamaliel should not forget that his *bête noir* is only orthodoxy. "Orthodoxy is the Bourbon of the world of thought." So far as the sanatory work of a demolisher goes, he may be regarded really rather as the negative friend than the positive enemy of religious belief.

After the numerous passages cited in these letters, it is not necessary to refer to the construction which evolutionists like Professor Hackel, and the whole corps of dogmatic materialists, put upon natural selection. This theory is supposed by such to be the last nail in the coffin of "spiritualism," or by whatever contemptuous epithet they choose to designate the opposite of their own purblind creeds. For them henceforth the unknown and the unknowable are but more or less advanced stages of a mathematical problem.

## LETTER XV.

OUR review of Natural Selection is now concluded. One result (to me at least) is clear. At no single point does this doctrine clash with the Design argument. There is neither concinnity nor conflict between them. Natural selection makes no pretence to efficiency. Call it "survival of the fittest," and it assumes at once its true aspect as a self-evident process of indirect adaptation. I am not thinking now of the vast consequences to biology of Darwin's splendid achievements. It would be as absurd to underrate these as to disparage the discovery of Newton, because the fact of gravitation was known before he conceived its universality and ascertained its laws. I am merely speaking with reference to Natural Religion, and again repeat that Darwinism leaves this where it found it. Production and reproduction, mobility and sensibility, variation and heredity, are all in full force before selection takes up the game. To these, then, we must finally look if we would know how it fares with Teleology when Evolution is afield.

My first duty is to lay before you the theories of Heredity that leading thinkers have propounded. There are three to be considered;—Professor Hückel's, Mr. Spencer's, and Darwin's. As these all rest upon the cell-theory—in truth, are but apologies, I might say, for the theory itself—we had better refresh our memories upon that before we go farther.

If you will look back to Letter VI., you will find there a description of the organic cell and its mode of propagation. A passage was quoted from Goethe's "Morphologie,"

which I remarked might have served for a statement of the cell theory at the present day. Witness the modern repetition of it: "Every organic cell is, to a certain degree, an independent organism, a so-called 'elementary organism,' or an 'individual of the first order.' Every higher organism is, in a measure, a society or a state of such variously shaped elementary individuals, variously developed by division of labour."<sup>1</sup> These are the two things to attend to when you are invited to accept this or that explanation of heredity. "Every organism composed of many cells was originally a single cell, and it becomes many-celled owing to the fact that the original cell propagates itself by self-division, and that the new individual cells originating in this manner remain together, and by division of labour form a community or state." The complex organism is nothing but an aggregate of elementary organisms. Each cell is an autonomous unit; and the unity of the living whole—the unity of the individual, the unity of its consciousness, its entire life, in short—is the resultant of myriads of tiny lives, with their incipient susceptibilities, and activities, and *quasi*-memories, and intelligences, and all the rest of it, bound up into one by—well, by themselves. No, I am wrong—by "division of labour." At any rate, personality is nothing but the unity of aggregation. "Just as peculiar characteristic features of man—pride, ambition, frivolity, &c.—are transmitted to the descendants strictly by inheritance, so too are the peculiar abnormal manifestations of mental activity which are usually called fixed ideas, despondency, imbecility, and generally diseases of the mind." "*This (!) distinctly and irrefragably shows that the soul of man, just as the soul of animals, is a purely mechanical activity, the sum of the molecular phenomena of motion in the particles of the brain,*" &c. &c.<sup>2</sup>

The cell-aggregation theory is here demonstrated by aid of hereditary transmission. But as evolution is unable to advance the breadth of a geometrical line without the

<sup>1</sup> Hückel, *History of Creation*, vol. i. p. 187.

<sup>2</sup> *Ibid.*, p. 179.

aid of transmission, the explanation of this also becomes urgent. You may be surprised to learn that Professor Hückel explains it by the first step in the process of aggregation itself. The whole secret of transmission, we are told, lies in the simplest form of propagation,—simplest, because there are two ways,—sexual and a-sexual. The last is the one referred to. You remember how this is managed in the moneron. That homogeneous little globule of slime jostles against some random matter, a crumb of which sticks to it, and gets drawn into the body of the mucus. In this way the globule grows;—quite a simple and natural affair; the random particle is made into jelly—*jelly exactly like that of the moneron*. If you will look into Letter V., or recall what is there written of the chemics of protein, you will have some idea of what *that* comes to! Then, having over-eaten itself, it divides *itself* in two, and each half “commences anew the simple course of the vital phenomena of nutrition and propagation.”

The mystery is solved. The whole affair of transmission is at once self-evident. “When one examines the simplest form of propagation, this self-division, it surely cannot be considered wonderful that the products of the division of the original organism should possess the same qualities as the parental individual. For they are parts or halves of the parental organism, and the matter or substance in both halves is the same; and as both the young individuals have received an equal amount and the same quality of matter from the parent individual, one can but consider it natural that the vital phenomena, the physiological qualities, should be the same in both children.”<sup>1</sup>

All the highest and most elaborate functions of the completed organism, including mental phenomena, are nothing but the sum of the activities of the molecules of which it is built up. This is the cell theory. The commencement of this building up, viz., the simplest form of propagation, explains heredity. This is Professor Hückel’s

<sup>1</sup> Hückel, *ubi supra*, p. 191.

transmission theory. In proof of the cell theory the transmission of "peculiar characteristic features" is cited. It turns out, however, that the circle is more perfect than it appears, for the two theories are one. They are but two aspects of propagation by self-division.

But we must not be over-pedantic. Let us make a fair effort to follow the working of transmission, now made so charmingly clear for us. The typical instance of organic evolution is the self-division of an entirely homogeneous atom of plasson, so absolutely unspecialised that any one part of it performs indifferently every function essential to its being. We are asked to imagine that all the phenomena of heredity are explained by the division of this undifferentiated protoplasmic body.

If a body be really uniform throughout, there is no obvious extravagance in the assumption that, when disrupted, the separate divisions should be constitutionally alike. But with each stage of development the units become more and more unlike their primitive ancestor and one another. Not unlike in respect of their cellular character, but functionally unlike, and therefore physiologically and chemically unlike. We have seen that inner layers and outer layers are formed—endoderms and ectoderms, as they are called; the business of the former being mainly with nutrition and its organs, that of the latter with the muscles and nerves; hence, with mobility and sensation, and ultimately with the intellect and the will. What then becomes of the argument that mechanical division produces no constitutional change; or that, so far from heredity being mysterious, it is as self-evident as that two halves equal a whole? "That cells, still retaining the same nature, increase by self-division or proliferation, is admitted by every one. But when an organism undergoes great change of structure during development, the cells, which at each stage are supposed to be directly derived from previously existing cells, must likewise be greatly changed in nature. This change is attributed by

the supporters of the cellular doctrine to some inherent power which the cells possess, and not to any external agency.”<sup>1</sup> With the introduction of this astounding diversity of attributes, and of “some inherent power” as the cause of it, axiomatic simplicity seems to me suddenly and for ever to disappear.

The fact is, the simplicity of the first step in propagation is no better than dust in our eyes. The building up of an organism *ab initio*, and the reproduction of this organism with the transmission of all its attributes, are as different as can well be conceived. It is possible to imagine that, after a homogeneous substance has been divided, unlike exposure to incident forces makes the separated parts unlike, and that this process of division and differentiation may be repeated until a very complex organism is produced. But in the reproduction of this particular organism, the evolution has to take place after a cut-and-dried pattern. *Precisely similar effects have to be produced by an entirely different set of causes.* Suppose, for example, some infinitesimal change has taken place in the direction of an eye,—a minute alteration in the morphological units about the spot where, in the course of some thousands of generations, perhaps, an eye will be developed. It is quite conceivable that these first changes may be what we call fortuitous—the results, *i.e.*, of combinations of forces which we are unable to detect; and when reproduction is achieved, it is also conceivable that in some individual of a later generation similar units may undergo a further change; always in consequence, mind, of some further combinations of inner and outer forces. But how on earth does this explain the repetition of these same changes in the absence of those forces? What resemblance can the evolutionary process, here figured, possibly bear to the transmission of the secured changes?

Propagation of like from like, postulates that the entire evolution of the parent form be chronicled in the germ.

<sup>1</sup> Darwin, *Animals and Plants*, &c., vol. ii. p. 366.

The molecular constitution of this germ-cell represents the whole phylogenetic history of the completed organism. The germ has to unfold itself, not now in obedience to existing conditions, not as originally into some form or other, but into fins or feathers, two legs or a score, as the case may be. Think, I beseech you, what folding there must be before we come to this unfolding! Not only have the entire series of vital, chemical, morphological, and all other results which have happened since this planet first supported life to be repeated in exactly the order in which they occurred; they have first to be secured, accumulated, and garnered up in a cell, which, whatever it develops into, is, we are confidently informed, precisely like every other cell. This may be "natural;" that it is intelligible, I deny.

Inconceivability, however, is not the only objection; though this is fatal to a scientific hypothesis. Another fault is that the facts of reproduction are not consistent with the hypothesis. So far from it being self-evident that like *must* produce like; reproduction is not always homogenetic. Plants and animals produce plants and animals that are quite dissimilar to themselves. And the striking part of it is, that while similarity or approximate similarity of the successive generations is invariably preserved in cases of sexual multiplication, complete unlikeness is confined to cases of a-sexual propagation. I do not desire to lay much stress upon these facts, because there are ways of meeting them which deprive them of some of their force. In cases of "alternate generation" there is a return to the point departed from. Nevertheless we may notice in passing a few curious instances of heterogenesis.

In the aphid, for example, an oviparous female and a winged male produce offspring which are sexless and wingless. These offspring—the pest of the garden throughout summer—repeat themselves by a process of internal gemmation, until the autumn. Winged males

are then generated, and eggs are laid, which, next spring, start the cycle afresh. The working of the law of transmission is very remarkable here, and receives no light from cell-multiplication by self-division. The persistence of what Professor Owen calls "the spermatic virtue of the ancestral coitus" lasts through eight or ten generations. Yet this gives but a faint notion of the strain upon the hereditary impulse. "The first-formed larva of early spring procreates not one but eight larvæ like itself in successive broods, and each of these larva repeats the process; and it may again be repeated in the same geometrical ratio until a number which figures only can indicate, and language almost fails to express, is the result."<sup>1</sup>

There are plenty of other instances of the same sort. The jellyfish is one. When its progeny are first issued, they are little globular ciliated beings betraying no family likeness whatever. After many changes they turn into plant-like polyps. These multiply by segmentation, and eventually become egg-bearing medusæ, such as they started from. The metamorphosis of some infusoria by *encysting* is still more remarkable. The animal melts itself down, as it were, to a nucleus or cyst, out of this cyst comes forth a new infusorium, as little like its parent as a chick is like an egg. The metamorphosis of insects is patent to every observer. Take any familiar one of these, like that of the moths; it will tax your ingenuity, I think, to explain the cycle of changes by the cell-multiplication and division-of-labour theories.

Such apparent anomalies, however, are less difficult to overcome than the reproduction of unicellular organisms. Amongst these we find living units of well-defined form, with ciliated mouths, contractile cavities or stomachs, anal openings, &c., highly accomplished little creatures, in short, which multiply themselves by spontaneous fission, at such a rate that in three or four weeks two or

<sup>1</sup> Owen *On Parthenogenesis*, p. 60.

three hundred millions will come from one of them. The reproduction of this comparatively complex organism is something very different from that of the moneron, or even of the nucleated cell. No one can believe that mere overgrowth produces such complicated functional activities as we have here. Yet no one denies that these animals consist of a single cell.

A criticism of biological histories is no part of my business, any further than these may happen to bear upon the argument of design. My purpose is to point out that evolution cannot budge without heredity; and that heredity is not to be "explained away" by the help of the multiplication table, and still less, as Professor Hückel pretends, by intelligible evolution. If I ventured to question the infallibility of a doctrine whose consequences are as trying to my credulity as the Pentateuch, I should suggest that the seeming similarity between all kinds of germinal matter, and the colloidal atoms which are the elementary constituents of the tissues, is entirely deceptive. Morphological resemblance is in this case no index to chemical composition. Even Darwin says, "Whether each of the innumerable autonomous elements of the body is a cell or the modified product of a cell, is a more doubtful question, even if so wide a definition be given to the term as to include cell-like bodies without walls and without nuclei."<sup>1</sup> Is it an irrefragable fact, as Virchow states, that "every single epithelial and muscular fibre-cell leads a sort of parasitical existence in relation to the rest of the body"? Is it indisputably true, as Hückel affirms, that the white-blood corpuscles are identical, so far as independent life is concerned, with amœbæ? "I showed," he says, "that these colourless blood-corpuscles, like independent amœbæ, can assimilate solid particles, can therefore eat."<sup>2</sup> Not to mention the inscrutable differences of atomic structure, there are palpable differences which are

<sup>1</sup> *Animals and Plants, &c.*, vol. ii. p. 366.

<sup>2</sup> *Evolution of Man*, vol. i. p. 145.

not to be overlooked. The white-blood corpuscles cannot reproduce themselves when removed from the organism. The amœbæ can do so. It is true the movements of the one closely resemble those of the other; but this does not demonstrate the independent vitality of the colourless blood-corpuscle. The movement here might be a reflex response to a dynamical stimulus, as purely mechanical as the chemical changes in a crystal.

Waiving such questions as these, and admitting them to be no better than the confused doubts of an ignorant inquirer, it still remains incontestable that the germ-cell which develops into a specific organism is essentially unlike the protozoon, which simply reproduces itself. Although these considerations seriously affect the cell theory, which in turn is the groundwork of all theories of heredity, they are pertinent to our subject only in so far as they prove that the real mystery of evolution lies quite out of the reach of intelligible first principles. This is the view I want to keep before you. In furtherance of it we may address ourselves to Mr. Spencer's doctrine of Polarity.

## LETTER XVI.

THE drift of the foregoing comment is that in Professor Hæckel's explanation of heredity, we have only half, and the least important half, of the story. Evolution by cell-multiplication would be intelligible (comparatively so, at least) if every individual structure evolved were different. But we want to know how complex structures are perpetuated; how, out of a given germ, we get the definite form we expect to get. The oversight seems to be that we are offered doctrines of evolution, when what we need is a theory of involution. Mr. Spencer's teaching seems to me as wide of the mark as Professor Hæckel's. The only scheme which really touches the difficulty is Darwin's Pangenesis. Mr. Spencer, however, shall first speak for himself.

“We must conclude that the likeness of any organism to either parent is conveyed by the special tendencies of the physiological units derived from that parent. In the fertilised germ we have two groups of physiological units, slightly different in their structures. These slightly different units severally multiply at the expense of the nutriment supplied to the unfolding germ, each kind moulding this nutriment into units of its own type.”<sup>1</sup>

The active agents, you observe, are the “physiological units.” Their special tendencies convey the ancestral likeness, and mould extraneous matter into units of their own type. This is very easy to write, and may be easy to believe. But are we any the wiser for it? What are

<sup>1</sup> *Principles of Biology*, § 84.

these physiological units, and how do they perform their miracle?

"There seems no alternative but to suppose that the chemical units combine into units immensely more complex than themselves, complex as they are; and that in each organism the physiological units produced by this further compounding of highly compound atoms have a more or less distinctive character."<sup>1</sup> The chemical units are the constituents of that gelatinous matrix which was before referred to as protein. This substance has all sorts of names, such as protoplasm, plastic lymph, plasmatic fluid, blastema, sarcode, &c. These serve mainly for euphony, or else to conceal ignorance: I am not aware of any other value they possess.

How do the physiological units work? They multiply by *assimilating* contiguous or surrounding matter. But assimilation means "moulding the nutriment into units of its own type." How is this done? The following is the only answer to the question: "Evidently this selective assimilation illustrates the general truth, demonstrable *a priori*, that like units tend to segregate. It illustrates, moreover, the further aspect of the general truth that the pre-existence of a mass of certain units produces, probably by polar attraction, a tendency for diffused units of the same kind to aggregate with this mass rather than elsewhere."<sup>2</sup> This is no answer at all, because where units of the "same kind" already exist, there is no need for "moulding." That there is need of moulding is obvious from the fact that, "organs are in part made up of units that do not exist as such in the circulating fluids."

The expression "polar attraction" is here employed. This is the key to Mr. Spencer's doctrine of Heredity. Professor Hückel explains heredity by growth. Mr. Spencer explains it by growth and repair. Considered by the light of these simple processes, heredity "becomes a matter of course; it falls into unison with the fact that,

<sup>1</sup> *Principles of Biology*, § 66.

<sup>2</sup> *Ibid.*, § 54.

in various simple organisms, lost parts can be replaced; and that, in still simpler organisms, a fragment can develop into a whole.”<sup>1</sup> Now growth, as most simply conceived, is mere increase of bulk. Where evolution is concerned, it implies something more than this. It implies segregation as well as aggregation: like particles must be separated and accumulated. Mr. Spencer illustrates organic growth by inorganic: the growth of the crystal is the clue to the growth of the plant and the animal. “Around a plant there exist certain elements that are like the elements which form its substance; and its increase of size is effected by continually integrating these surrounding elements with itself. Nor does the animal fundamentally differ in this respect from the plant or the crystal. Its food is a portion of the environing matter, that contains some compound atoms like some of the compound atoms constituting its tissues; and either through simple imbibition or through digestion the animal eventually integrates with itself units like those of which it is built up, and leaves behind the unlike units.”<sup>2</sup>

The force by which the diffused atoms of a given salt are impelled to crystallise in a given way is called, for convenience' sake, “polarity.” The term is equally applicable whether the diffused salts are segregated by the presence of a crystal of the same salts or not. Mr. Spencer uses the term “organic polarity” in the like manner, sometimes to express “the power which certain units have of arranging themselves” into the special structure of the organisms to which they belong; sometimes to express the force by which “a pre-existing mass” of special units constrains unlike atoms to take their own definite form. The two processes are, however, quite distinct; for while the first instances one phase of the principle of growth, under the “universal tendency towards the union of like units and the parting of unlike units,” the latter enunciates distinctly the principle of repair, as here plainly

<sup>1</sup> *Principles of Biology*, § 97.

<sup>2</sup> *Ibid.*, § 43.

put : "The repair of a wasted tissue may therefore be considered as due to forces analogous to those by which a crystal reproduces its lost apex when placed in a solution like that from which it was formed. In either case, a mass of units of a given kind shows a power of integrating with itself diffused units of the same kind ; the only difference being, that the organic mass of units arranges the diffused units into special compound forms before integrating them with itself."

Now, in whichever sense we employ the term polarity, whether as a symbol for the process of growth or for that of repair, neither one nor the other throws any light upon, or in the smallest measure helps to simplify, the mystery of transmission. Growth, as we have already seen, either by "selective assimilation," or by imbibition of like units, bears no analogy to the moulding of ordinary protoplasm—the raw material of all organic structures—into the special cellular substance of a given plant or animal. Repair is equally impotent for the same purpose. The repair of a wasted tissue may, I grant, be analogous to the redintegration of the lost apex of a crystal. But in both cases the constraining energy resides in the "pre-existing mass." A lobster will renew a lost claw, a newt its tail, a snail its head, &c. "If a leg is reproduced where there was a leg, and a tail where there was a tail, we have no alternative but to conclude that the aggregate forces of the body control the formative processes going on in each part." There can be no doubt of the truth of this ; and all the cases illustrative of repair which Mr. Spencer adduces, such as blood-poisoning, budding, grafting, and so on, point to the same truth. But in every one of these, as repair necessarily implies, there must be "a pre-existing mass." When you come to primary transmission, where is your pre-existing mass ? Where do your aggregate forces come from ? You have nothing to start with but a single cell or globule of slime, indistinguishable from every other globule of slime.

If you consider the development of any particular organ, you will see at once how inadequate is the reference to repair. "During its bud-like stage, the rudimentary arm is nothing but a homogeneous mass of simple cells, without any arrangement. By the divers changes they gradually undergo, these cells are transformed into bones, muscles, blood-vessels, and nerves." What transforms them? The physiological units. What then makes the chemical units combine to form the requisitely specialised physiological units before any arm exists at all? The sole reason for there being an arm is, that the parent of the germ which has unfolded up to the arm-budding stage, itself had an arm.

Again, there are certain phases of repair which are as hard to unravel as transmission. I allude to those cases which involve transmission; (if indeed one instance of repair can be said to do so more than another). A man has a mole on his right foot, let us say. He loses his leg; some years later he marries; his children have two legs, and moles on their right feet. Shall we say the lost leg of the father is repaired in his offspring and the mole transmitted? Or shall we put it the other way, and say the mole is repaired, &c. ? This would sound ridiculous. Yet one seems almost as correct as the other. Certainly one is as intelligible as the other. Where a tail or any limb is renewed, the mechanical interpretation of it is that certain genealogical units are somewhere stowed away; that these impart their rate or mode of vibration to the atoms of the contiguous pabulum; and that the new atoms dance to the measure of the old tune. In any case, we must assume the presence of pre-existing cells. In the lobster it has been ascertained that, the regenerative cells reside "at the basal end of the first joint of each of the legs. This joint is almost filled by a mass of nucleated cells surrounded by a fibrous and vascular band; . . . a great proportion of the reproductive cells . . . is used up in the production of the new limb; but

a mass of them is retained unchanged at the basal joint, and ready to renew the reproductive process when needed."<sup>1</sup> Is there also a depôt for atomic recruits to restore parental moles?<sup>2</sup>

In the first passage quoted from Mr. Spencer, he says likeness is conveyed by the special tendencies of the physiological units derived from the parent. Beyond this barren statement of the fact nothing is added to our knowledge. No answer to the question how or why this is so is even attempted. Nor will an answer be forthcoming until the germinal cell itself is put to the question. Meanwhile it is misleading to talk of "matter of course," if we begin our explanation of a process just where the mystery ceases, and ignore the only thing that needs solution.

Darwin does storm the citadel at the point where conquest is really important. His hypothesis of pangenesis "implies that every part of the whole organisation reproduces itself. So that ovules, spermatozoa, and pollen grains,—the fertilised egg or seed, as well as buds,—include and consist of a multitude of germs thrown off from each separate part or unit."<sup>3</sup> "I assume that the units throw off minute granules which are dispersed throughout the whole system; that these, when supplied with proper nutriment, multiply by self-division, and are

<sup>1</sup> Owen, *Parthenogenesis*, p. 49.

<sup>2</sup> The following account of an operation performed in the Westminster Hospital is so curious and interesting that its insertion needs no apology. A diseased bone threatening the life of the patient had been removed. "After six months, no vestiges of osseous tissues having appeared in the patient's leg to replace that which I had taken away, and as the limb was perfectly useless, I determined to endeavour to form a new tibia. I therefore took perfectly fresh very small pieces of bone and periosteum from the foot of a patient's limb I had amputated; and I placed these pieces of bone and periosteum in a groove

made in this little girl's leg, in the situation of her tibia. The proceeding was conducted on Listerian principles, and no suppuration occurred. From these little bits of bone and periosteum new osseous tissue has formed. A narrow ridge of bone can be felt along the course of the osseous tissues which I planted in her leg. The wound has entirely healed; and where no bone whatever existed six weeks ago, now a narrow band of osseous tissue has been produced," &c.—*Trans. Internat. Med. Congress*, vol. ii. p. 344 (1881).

<sup>3</sup> *Animals and Plants*, &c., chap. xxvii.

ultimately developed into units like those from which they were originally derived. These granules may be called gemmules. They are collected from all parts of the system to constitute the sexual elements, and their development in the next generation forms a new being; but they are likewise capable of transmission in a dormant state to future generations, and may then be developed.”<sup>1</sup>

This hypothesis has at least the merit of accounting for the facts. But follow it out in thought, and you will soon see at what a cost the victory is won. The gemmules are collected from all parts of the system. Each separate unit has by some inconceivable process of suffrage to elect a representative, which is the depository of all its past history and present capabilities; these deputies must get themselves conveyed somehow into the germ-chamber, and there dwell in harmony—not decomposing and re-composing one another by chemical or other action (as the law of equilibration would lead us to expect), but preserving for any number of years their pristine potentialities intact and undisturbed.

The tale of the fisherman and the genie is not more wonderful. And we too are tempted to exclaim, “The vessel is not capable to hold one of your feet, O Genie! how is it possible that your whole body could be in it?”

Yet even this collecting is not more bewildering than the subsequent distribution which Heredity requires. When liberated, the gemmules must arrange themselves in their old relative places. The millions of them that come from an eye have to lie in wait, “in a dormant state,” until the new being develops an eye. Then each atom has to find its way to a spot in which it bears exactly the same relative position to all its compeers as similar atoms bore in similar antecedent structures. And when it has got there—a spot, by the way, which does not exist, because its existence depends on other units like itself, which do not yet exist—it has

<sup>1</sup> *Animals and Plants*, chap. xxvii.

to generate millions of other units like itself out of homogeneous plasson, or whatever the material may be; rearrange the constituent elements of this; form fresh chemical compounds, fresh physiological units; and distribute, and arrange, and combine these, so that each one shall perform its distinct and appropriate office. And, crowning marvel of the whole, the separate activities of these billions of inscrutable molecules minister, and have no *raison d'être* but to minister, to the integral life of the individual, which is no individual after all!

To be sure, Mr. George Darwin has calculated how many thousand million of millions of molecules are contained in a cube of one ten-thousandth of an inch of glass or water. It is true a single flower will throw off atoms enough to perfume a moderate-sized garden; and spicy odours reach a ship (as I myself have experienced in tropical seas) long before the land is sighted. Such facts, no doubt, assist us to conceive how the germ-cell may be capacious enough to hold all that pangensis requires it to hold. But the collecting, the nourishing, the propagating, the distributing,—what are we to think of these? What have we gained in point of simplicity or picturability by this theory of pangensis? What nearer are we to the faintest inkling of the radical truth? And yet, until Heredity is explained, no explanation of evolution is possible. It is the blindest delusion to imagine that, all the mysteries of the universe are to be cleared up by reducing them to “first principles;” that in the end every problem of being is reducible to a self-evident proposition. It is this childish credulity of ignorance, fostered by an army of arrogant and starved-minded specialists, that has frozen the religion out of the hearts of the foolish many. Simplicity, forsooth! If we did but know it, there’s no *simplicity* but our own. Organic evolution, I repeat, presupposes heredity. Development can only be grafted on to that which has already been developed. “Each material form,” as Sir W. Grove says, “contains the past history of the world.” The secret

of evolution is at present locked up in the process of involution. The problem of Heredity, upon which evolution depends, has yet to be worked out within the walls of the primary cell.

Do I then believe that the evolution of life at its commencement is less natural, less purely physical, than its continuance or its extinction? Certainly not. Nor do I pretend that conceivability or the reverse is any test of the truth of a theory. It is a test of its scientific value; because science means knowledge; and an hypothesis which can only be made intelligible by reference to what is unintelligible is no better, for scientific ends, than direct appeal to miracle. Not that I look for miracle here. If, compelled by the exigencies of my poor intellectual capacity—completely at the mercy, as it is, of some four or five miserably imperfect senses—I think and speak of matter as the realist or the ordinary uneducated person thinks and speaks of it; if, for the purposes of reasoning, I permit myself to talk as though the “Dirt Philosophy” were the one limpid fountain of truth,—as though there were no truth beneath this pitifulest of delusions,—I must go back in thought to the starting-point of Evolution, wherever that may be. Assuredly the beginning of life is nowhere near *that* beginning. Science will some day come to look upon life’s beginnings as the stalest of its commonplaces. Double the power of our best microscopes, and, as Sir W. Thomson has shown, we shall actually see the molecular structure of water. “We can look forward to the time,” says Clifford, “when the structure and motions in the inside of a molecule will be so well known that some future Kant or Laplace will be able to make an hypothesis about the history and formation of matter.” If, then, we may not hope to rival the faithful saint who *saw* transubstantiation take place, we may believe that before the next glacial period, say, *generatio æquivoca* at least will no longer be the “pons” of the scientist.

What then, you may ask, do I mean by starting-point? Little enough worth mentioning. What can blind guesses

be worth when one is palpably on a false track? One clumsy notion of it, if you will, takes some shape like this: By starting-point, I mean that point to which thought carries me in its last attainable analysis of force or matter;—a point where the properties of ultimate atoms are themselves ultimate, and not the product of any other atoms or of the combinations of other atoms.

Let me roughly illustrate. We recognise the presence of a certain gas or metal, in no matter what distant star, by the definite rates of vibration which the gas or metal manifests. Throughout the material universe we assume these rates of vibration to be constant. More, much more, than this; we must, upon the same principle of uniformity, assume they have been unchanged ever since the material universe was in being. The theory goes that the gas, however simple, is what it is, oxygen or hydrogen, &c., because the atoms of which it consists have a special and definite structure of their own, which belongs to them and to no other atoms whatsoever. Although, therefore, the gas is not an ultimate thing, these, its atoms, must be conceived to be so.

Next, our specialised atoms, whose peculiar structure initiates all the consequences which this or that gas ever has been or ever will be parent of, are ultimate (this is my notion) in one sense only:—their special properties are not *physical effects*. Why not? Why are these physical facts exempt from the universal law of physical causation? Well, there is just the shadow of a rational argument cast by this spectrum-analysis business. All other phenomena, from thought upwards and downwards (it is said), are modes of motion; but, *ex hypothesi* (with or without the permission of logic), the “atoms” to which the urgency of thought has carried us are themselves the very centres of every mode of motion,—are ultimates of their own kind, and motion-generators. If the gas atoms be not such, then in thought I go back till I reach the ultimates; that’s all. This wonderful

discovery of universality in the properties of certain atoms does, in a sort of way, countenance some such groping in the dark as this,—does almost scientifically, in fact, bring us where we never were before—face to face with a natural beginning.

But, say you, any motion to start with would generate every motion to end with. Not so. The doctrine of Empedokles and of Hume, that the “mere trial of all possible combinations” must end in “some order which can support or maintain itself,” postulates “perpetual restlessness,” and infinite trials of “new order and economy.” But, had all the atoms in the universe been originally *alike*, they could have embodied but one single kind of energy. They could therefore have produced but one single effect. Rather they would have produced no effect at all; for there would be no sufficient reason why the energy should ever pass into force. Perfect equilibrium would have existed from eternity, consequently there would have been no change. But this (for us) is tantamount to non-existence; and so we are driven back to the original *unlike*, with eternal silence on the part of Nature and her first principles as to the cause of being. “The laws of organic structure cannot work towards an end unless the material was adapted to that end from the beginning.”<sup>1</sup>

This is the primordial molecular arrangement of Professor Huxley’s teleological speculator. Still I do confidently affirm that the outcome of this original unlike is something more than an “unessential incident.” Upon that outcome—kosmos and nothing less—and upon this complex beginning, I, as a hypothetic evolutionist, repose my faith. My senses and my reason teach me that “the entire visible universe has been evolved,”—the solar system, the earth, the life upon it, and so forth. Am I asked, If this be true, is it not true of Mind, and all *we* have to do with Mind? Well, I answer: Here was a

<sup>1</sup> Du Bois-Reymond.

beginning in time. This earth's age we compute at one hundred millions of years or so; five—ten times as much, if you please; if our science were more "exact" you could have it in weeks, in seconds. And if I rightly comprehend the reasoning which gets its atheism out of its materialism, precisely so many minutes ago conscious existence was first hatched into being. Before that, eternal unconsciousness; out of which an eternity of labouring evolution at last brought forth MAN, who (by the blessed aid of science) has become aware of *this* and nothing less; and knows (also with scientific certitude) that, besides his *human* intelligence, there is none other in the universe to take thought either of universe or itself. In other stars, perhaps? Also beginnings in time; also computable in minutes. No! I look out upon the stellar firmament and say, Not in any of you resides Eternal Consciousness. Yet to think that such was *not* till this or that speck of star-dust began to be, is not possible. *To think that thought had a beginning is not possible. To think that eternal thought is made up by a regress of finite evolutions of thought is not possible.* To think that evolution perfects all, only to plunge perfection in a sea of death, is worse than impossible. Rather than such teaching (for me), I follow (if any man's) the creed of the greatest of our latter days. As Goethe, in the fulness of years and knowledge and wisdom, watched the sinking sun, "he was a while lost in thought," and then broke silence with—

"Untergehend sogar ist's immer die selbige Sonne ;

. . . Death! Me the thought leaves in perfect peace, for I have the firm conviction that our spirit is a being of quite indestructible nature; it is an unceasing activity from eternity to eternity. It is like the sun, which seems to sink to our earthly eyes only, yet which in truth never sinks, but shines unendingly."

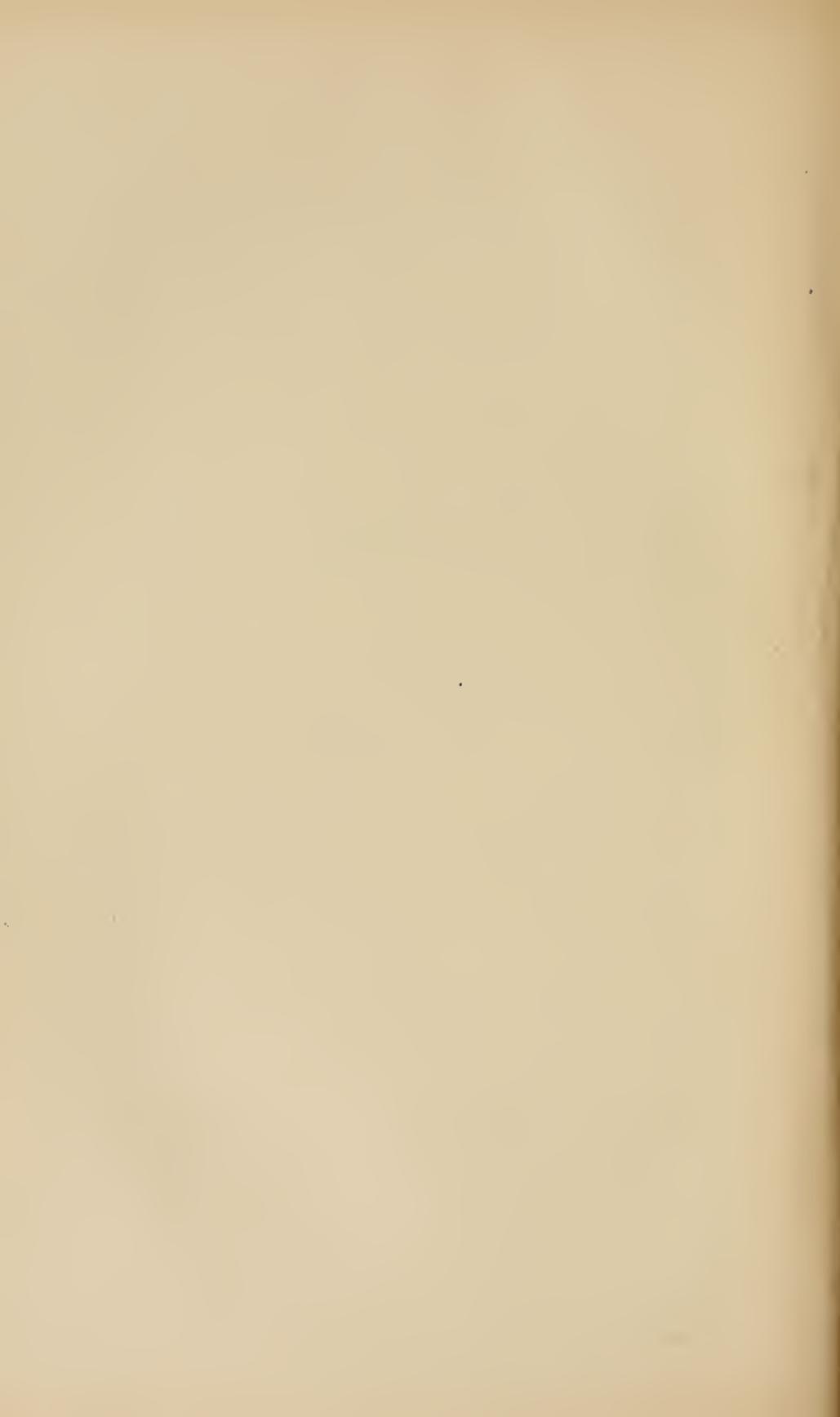
## Third Series.

### TRANSCENDENTAL THEOLOGY.

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“Das die Ordnung der Natur nicht die einzige und absolute Ordnung der Dinge sei. Daher kann man als das nothwendige Credo aller Gerechten und Guten dieses aufstellen : ich glaube an eine Metaphysik.”  
—SCHOPENHAUER, *Die Welt als Wille*.

“Ich musste also das Wissen aufheben, um zum Glauben Platz zu bekommen.”—KANT, *Kritik, &c.*



## LETTER I.

It is not uncommon to hear metaphysic denounced as an unprofitable study. We are reminded of the practical ends of life, and of the paramount importance of physical science. With similar plausibility it might be urged that, the steam-engine and the electric battery were more beneficial to our race than the works of a Raphael or a Beethoven, a Dante or a Shakespeare. Yet it is questionable whether the advance of science has in any comparable ratio increased the happiness of mankind. It has augmented the wealth of nations, and has helped the accumulation of stupendous private fortunes; but its benefits are not distributed, and the masses of the populations are as indigent as, and more discontented than, of yore. The desideratum (amongst all classes, in truth) is for a higher culture. Thus created, this is the only want that can be legitimately indulged.

If the transcendental world which metaphysic opens to us be but a world of poesy, "precisely upon this fact rests its worth and nobleness; for poesy, in the high and comprehensive sense in which it must be taken, cannot be regarded as a capricious playing of talent and fancy with empty imaginations for amusement, but it is a necessary offspring of the soul, arising from the deepest life-roots of the race, and a *complete counterbalance to the pessimism which springs from an exclusive acquaintance with reality.*"<sup>1</sup> Man's sense of beauty is not to be ignored because he values what is useful. He must always seek to gratify the nobler needs of his emotions

<sup>1</sup> Lange's *History of Materialism*.

and his intellect in the expression of thoughts which, even for the poet, lie too deep for words.

But those who treat metaphysics with scorn overlook the fact that every child or savage who believes in ghosts, every rustic who attends the parish church, and every philosopher who talks of "force," testifies to the universality of the metaphysical method. It is only a question whether we shall promote or neglect its culture; whether we shall prefer siles from the hedges to grapes from the vinery. In these days, when scientific systems are based on first principles, metaphysics must be appealed to as the groundwork of the principles themselves. By ultimate beliefs is meant beliefs that are not susceptible of proof; and metaphysic is, as Kant tells us, "the science of the limits of human reason." These ultimate beliefs or first principles mark the impassable bounds of human knowledge: the passage from the knowable to the unknowable is the subject-matter of transcendentalism.

As mental discipline, in Kant's sense of the term, the study of metaphysic is of inestimable value. It plucks the scales of realism from our eyes, and reveals a world of thought, into which, it is true, we can never hope to penetrate, but by whose dazzling light we detect the darkness of our inherent and insuperable ignorance. If its lessons are mainly negative as doctrines, they are positive enough in results. If it forbids us to entangle ourselves in the antinomies of a rash mysticism, it at least protects us from the fell gripe of dogmatic irreligion. It may not exalt us to the raptures of an orthodox heaven, but it may rescue some who are drifting to despair on the wreck of a sinking creed.

The labour of thought is so repugnant to the generality, that opinion for the most part is taken upon trust. Hence strength of prejudice, rhetorical skill, plausibility and arrogance, are accepted as pledges for the truth of a pleader's cause.

The fundamental belief of materialism is the intelligibility of the world. Büchner asserts that: "It lies in the nature of philosophy that it should be common property. Expositions which are not intelligible to an educated man are scarcely worth the ink they are printed with."<sup>1</sup> It is intelligibility which has made Büchner's work so popular. But it is just this intelligibility, or rather crude superficiality, which deprives it of philosophic worth. "In the end," says Du Bois-Reymond, "the one goal appointed to all science may be not to comprehend the nature of things, but to make us comprehend that it is incomprehensible."<sup>2</sup> Materialism, however, will always insinuate itself into the good graces of the many by virtue of its picturability. It has such a facile way of clearing up mysteries, that what is so easy to represent must (it is thought) be true. In addition to the intricate subtleties of metaphysics, the notion prevails that transcendentalism is but another name for superstition. The gospel of Positivism denounces metaphysic as on a par with theism; both, according to Comte, being inferior stages of man's mental development, analogous to the embryonic phases to which the human fœtus is also subject. But man is a metaphysical animal. The presence of death alone must make him so. If the Positivist still insists that, whether we like it or not, the world of the senses must suffice us, the metaphysician replies: There is a world beyond the reach of the senses, to which the Positivist himself habitually refers. "The order of nature is not the sole and absolute order of things. Hence one may affirm that the necessary *credo* of all the right-thinking and the good is this, I believe in a metaphysic."<sup>3</sup>

The problems of existence being invincible, the guesses at their solution cannot be obvious. Nor is it easy to perform the part of their expositor. Were I writing the

<sup>1</sup> *Force and Matter.*

<sup>2</sup> *Inquiry into Animal Electricity.*

<sup>3</sup> Schopenhauer, *Die Welt als Wille.*

history of philosophy, the calendar might afford a plan for the undertaking. But what is to guide us in reviewing the creeds, the heterogeneous creeds of our own day? The truth is, the philosopher is like a squirrel in his cage; the world spins away under his efforts, but never an inch does he gain. There may be new combinations of thought, but there are no new methods. Our systems are but *replicas* of the ancient masters. The very same puzzles which tormented their brains still rack ours, and with just as little prospect of success. Some slight acquaintance, therefore, with the old questions and their former treatment is indispensable. When we have mastered these, it will be less difficult to bring the newest into relation with them and with one another.

Inquiry and speculation imply ignorance and doubt. Some kinds of ignorance are curable, some are not. What can we know? what can we never know? These are the questions, rudely shaped, which thinkers have always been at work upon. There never can have been a time when thinking men were free from doubts. The RELATIVITY of knowledge must have been as evident to those who designed the pyramids as it is to the President of the Royal Society. From first to last, the one problem for the philosopher has been and is: How to justify his beliefs and his disbeliefs. From the moment man's senses first deluded him and he was conscious of the fact, from that moment he became a sceptic. From the moment correspondence between the inner and outer world was felt to be imperfect, the possibility of perfect belief was at an end.

The history of philosophy begins by relating how, between 2000 and 3000 years ago, the Greeks set themselves to criticise the validity of knowledge generally. What dependence is to be placed on the senses? What does the mind itself contribute? Parmenides has no faith in sense-knowledge. Heraklitus despises all knowledge not derived from the senses. Here we have the

typical thinkers. The difference between these two is essentially that which has divided all others down to the present hour. The tendency of one set is in the direction of pure mysticism; that of the other towards sheer materialism.

It is clearly of no use "philosophising,"—no use talking of cosmogonies, theories of existence, and such like, until this radical point, the very source of all ideas, has been thoroughly investigated. To whatever school we belong, we must start with propositions which do not admit of proof; and the whole edifice of either reason or speculation may tumble to pieces unless we make sure of our foundations. Where do we get the material for these foundations, and what is the value of it?

One side, as just observed, declares that the mind itself supplies intuitive beliefs, which are the original premises of every kind of knowledge. The other, while admitting that these beliefs do, for the most part, exist, contends that they are not ultimate, but acquired facts of consciousness, originating, like all the rest of our ideas, in experience. The intuitionists maintain that these primary beliefs cannot be so derived, because they bear the stamp of necessity and universality,—characteristics which no experience could ever confer upon them. For instance, the proposition: two straight lines cannot enclose a space, compels assent as soon as it is understood. But though it is equally true that a stone flung into the air *invariably* falls to the ground, there is no necessity in the belief. It is easy to imagine the stone going on to the moon.

As to the value of these primary beliefs, the mentalists hold them to be of higher authority and more absolute certitude than any knowledge derived from experience could be. As to the consequences of the dispute, what can be graver? Belief in God and knowledge of right and wrong, if not necessary and universal, are at least innate. So affirm this set, whilst their opponents—the sensationalists—as positively affirm the contrary.

Descartes was the reviver of the ontological school.<sup>1</sup> His *cogito ergo sum* seemed to him as safe as self-evidence could make it. In a world where the senses deceive, and reason itself leads to opposite conclusions, here was an axiomatic truth beyond the need of proof. Descartes set out with the maxim, "Never to accept anything as true but what is *evidently* so; to admit nothing but what so clearly and distinctly presents itself as true, that there can be no reason to doubt it." It is impossible to doubt one's own existence. "He who thinks must exist while he thinks." To doubt one's existence is to prove it—by doubting. The required basis is obtained. All we have to do is to proceed in philosophy as in mathematics; just as the science of mathematics is reared upon the two axioms: "Things equal to the same thing are equal to one another," and "The sums of equals are equal;" just as these are perfectly safe data for all calculations of magnitude and number, so the convictions to which consciousness directly testifies are safe bases for calculations concerning *existence*. The deductive method pursued in mathematics may be securely employed in ontology.

I exist; I am finite, imperfect, dependent, mutable, &c. What follows? Why, that each one of these relatives must have its correlative,—the infinite, the perfect, the omnipotent, and so on. My existence, as contingent, postulates the existence of an absolutely necessary being as its cause. These ideas are all distinct and clear in my mind. If they were fabrications of my own, I could unmake them. This I cannot do. Yet as nothing can come of nothing, my idea of an Infinite Being must have a cause,—an adequate cause. But the only adequate cause is God. Hence the reality corresponding to the idea.

The maxim: "Omne id quod valdè et distincte con-

<sup>1</sup> "Those who maintain that the mind apprehends by intuition things and the laws of things not cognisable by our sensitive faculty are designated as the *ontological* school." —*G. Lewes*.

cipiebam, verum est," holds good, mark you, concerning *existences* only. For it is obvious that, unless the idea admitted of conceivable comparison with the object of it, any fiction of the imagination would, by the above rule, possess extra-mental reality. But then if the idea of perfection, in virtue of its clearness and distinctness as the correlate of imperfection, involve being, this does not admit of verification: existence in this case must be assumed. Descartes attempts to evade the difficulty by making God, to a certain extent, the direct object of consciousness; which consciousness he has already assumed to be infallible. The idea of God is so far *innate*: "Nature has endowed us with a faculty by which we may know God."

From Plato, who held the doctrine of innate ideas as a pure idealist, to Mr. H. Spencer, who holds it in a realistic form, the doctrine itself has passed through the nicest shades of variation. What Descartes meant by his *idées naturelles* he has left on record in the following statement: "I have never either thought or said that the mind has any need of innate ideas which are anything distinct from its faculty of thinking. But it is true that observing that there are certain thoughts which arise neither from external objects nor from the determination of my will, but only from my faculty of thinking, in order to mark the difference between the ideas or the notions which are the forms of these thoughts, and to distinguish them from the others, which may be called extraneous or voluntary, I have called them *innate*. But I have used this term in the same sense as when we say that generosity is innate in certain families, or that certain maladies, such as gout or gravel, are innate in others; not that children born in these families are troubled with such diseases in their mother's womb, but because they are born with this disposition or the faculty of contracting them."<sup>1</sup> This tallies with the Darwinian theory of heredity; but, what is more interesting, it completely anticipates the teaching of Mr. Spencer,

<sup>1</sup> Quoted in Professor Huxley's *Hume*, p. 83.

who, notwithstanding, deserves credit for bringing the principle into prominence as a bond of union between the adverse schools. The "innate ideas" of the mentalists, and the "forms of thought" of the Kantians, are now brought under "the law that habitual psychical successions entail some hereditary tendency to such successions, which, under persistent conditions, will become cumulative in generation after generation."<sup>1</sup>

It may be noted in passing, that this bit of physiological psychology is like a handful of corn that is a sample of the sack. Descartes' theory of life was a mechanical one: animals he took to be automata. It was this mechanical theory of his which prompted the once famous De la Mettrie to write his "Homme Machine;" and which, into the bargain, is virtually the embryo of modern materialism.

To turn from the pattern mentalist to a contemporary, and no less eminent, sensationalist—Hobbes: "Concerning the thoughts of man," says he, "the original of them all is that which we call SENSE (for there is no conception in a man's mind which hath not at first, totally or by parts, been begotten upon the organs of sense). The rest are derived from that original."<sup>2</sup> Again, "Whatever we imagine is FINITE. Therefore there is no idea or conception of anything we call INFINITE. . . . When we say anything is infinite, we signify only that we are not able to conceive the ends and bounds of the thing named, having no conception of the thing, but of our own inability; and therefore the name of God is used, not to make us conceive him (for he is *incomprehensible*, and his greatness and power are inconceivable), but that we may honour him. . . . For none of these things ever have, or can be incident to sense, but are absurd speeches taken upon credit (without any signification at all) from deceived philosophers, and deceived or deceiving schoolmen. . . . A man can have no thought representing anything

<sup>1</sup> *Principles of Psychology.*

<sup>2</sup> *Leviathan*, chap. i.

not subject to sense.”<sup>1</sup> These are the elements of the analytical and inductive method, which in the hands of Locke was soon to become so formidable.

The two great systems are now arrayed. According to the first, the mind generates certain ideas through its own spontaneous activity; this is proved by the character of the ideas themselves as decided by an appeal to consciousness. According to the second, *all* ideas are derived through the senses; this is proved by analysing complex ideas and reducing them to their elements. Where analysis is not possible, analogy is; we can trace most ideas to their origin in experience, and we may reason inductively from these instances to the principles which govern all.

Upon the bald and inadequate statement of Hobbes, Locke made a considerable advance by admitting “reflection” to be a source of knowledge in addition to sensation. Then followed Leibniz, who maintained that we are intuitively cognisant of *a priori* or innate truths, and avowed that Locke had overlooked the fact that, the intellect itself is innate. This celebrated remark gave a new turn to the controversy, and, in spite of its alleged emptiness, has had a lasting effect upon mentalism. Lewes, amongst others, objects to the dictum as unmeaning. “Innate in what?” he asks. “In itself or in us? To say that it is innate in itself is a quibble.” No one disputes that the mind of man was born in man. “The question was, are there any ideas born *with* the mind, or are all ideas acquired by the mind?”<sup>2</sup> There is, I think, an ambiguity in this alternative which might convey a wrong impression. The question really was (after Locke’s treatment of it), Is the mind primarily active or passive? Is it a *tabula rasa*, whereon the first legible characters are traced by the senses, or does it itself contribute to the inscription? Locke held the former opinion, Leibniz the latter. But Lewes’s phrase, “acquired by the mind,” which is intended to represent Locke’s theory as opposed to that

<sup>1</sup> *Leviathan*, chap. iii.

<sup>2</sup> *Hist. of Phil.*, vol. ii. p. 291.

of innate ideas, clearly implies subjective activity, and so might stand for the theory of Leibniz, which Lewes dismisses as beside the question.

In support of his maxim that, "the soul originally contains the principles of several notions and doctrines which the external objects only awaken on occasions," Leibniz argued that certain truths are both universal and necessary, and that no theory of mere sense-experience will account for them. "All the examples," he says, "which confirm a general truth, however numerous, do not suffice to establish the universal necessity of that truth; for it does not follow that that which has once occurred will always occur in the same way."<sup>1</sup> "Our senses can inform us of what is, not of what must necessarily be." "Logic, metaphysics, and morals are full of such truths, and consequently their proof can only come from those internal principles which we call innate." These famous sentences, and others to the same effect, have been reiterated, under every possible form, by every mentalist up to the present day.

As the framework of transcendental philosophy, necessary truths must receive their full share of our attention. But although Sensationalism, as expounded by Locke, was designed to refute the doctrine of innate ideas, the belief that our knowledge was exclusively derived from the senses as naturally comes first, as the Materialism (which is its consequence) was the earliest product of systematic speculation. To Locke's immortal Essay, therefore, we will now betake ourselves. His Sensationalism introduces us to modern Realism and modern Materialism. From Realism we shall pass to Transcendentalism: I shall then ask you to follow me through a somewhat lengthy review of Kant; and with his philosophy and some short notice of its present acceptance, these Letters will be brought to an end.

<sup>1</sup> *Nouveaux Essais, avant-propos.*

## LETTER II.

SECT. I. Locke's purpose is "to inquire into the original certainty and extent of human knowledge." He begins by examining the so-called innate principles. His method of proceeding is by analysis of the whole contents of the mind. He hopes to convince us that the theory of innate ideas is false by showing "how men barely, by the use of their natural faculties, may attain to all the knowledge they have" (Book i. chap. 2). This method is accordingly called the analytical method, and is that which is adopted by his followers at the present day.

Locke's  
design, and  
method.

Sect. 2. The mind in the beginning is, "as we say, white paper, void of all characters, without any ideas; how comes it to be furnished, &c.?" To this I answer in one word, from experience" (Book ii. chap. 1). "Ideas in the understanding are coeval with sensation, which is such an impression or motion made in some part of the body as produces some perception in the understanding. It is about these impressions made on our senses by outward objects that the mind seems first to employ itself in such operations as we call perception, remembering, consideration, reasoning, &c."

The mind  
originally  
passive.

"First our senses . . . do convey into the mind several distinct impressions of things, according to those various ways wherein those objects do affect them, &c. This great source of most of the ideas we have, depending wholly upon our senses, . . . I call SENSATION.

"Secondly, the other fountain from which experience furnisheth the understanding with ideas is the perception of the operations of our own mind within us as it is employed about the ideas it has got: which operations, when

the soul comes to reflect on and consider, do furnish the understanding with another set of ideas, which could not be had from things without, &c. I call this REFLECTION."

Perception. "Whatever alterations are made in the body, if they reach not the mind; whatever impressions are made on the outward parts, if they are not taken notice of within, there is no perception. Fire may burn our bodies, with no other effect than it does a billet, unless the motion be continued to the brain." (Book ii. chap. 9.)

Simple and  
complex  
ideas.

Sect. 3. Ideas are of two kinds, simple and complex. Simple ideas are those produced by the qualities of bodies that affect our senses. They are called simple because, although the qualities are united and blended in the things themselves, "yet it is plain the ideas they produce in the mind enter by the senses simple and unmixed, &c. As the hand feels softness and warmth in the same piece of wax, yet the simple ideas thus united in the same object are as perfectly distinct as those that come in by the different senses, &c. These simple ideas, the materials of all our knowledge, are suggested and furnished to the mind only by those two ways above mentioned, viz., sensation and reflection. When the understanding is once stored with these simple ideas, it has the power to repeat, compare, and unite them, even to an almost infinite variety, and so can make at pleasure new, complex ideas. But it is not in the power of the most exalted wit or enlarged understanding by any quickness or variety of thought to invent or frame one new, simple idea in the mind." (Book ii. chap. 2.) "Simple ideas are all from things themselves, and of these the mind can have no more nor other than what are suggested to it." (Book ii. chap. 12.) "The mind, in respect of its simple ideas, is wholly passive." (Book ii. chap. 22.)

Substance.

Sect. 4. Locke treats of various kinds of complex ideas, such as space, figure, immensity, place, and so on, till he comes to substance, of which a word or two in passing. "They who first ran into the notion of accidents, as a sort

of real beings that needed something to inhere in, were forced to find out the word substance to support them." (Book ii. chap. 13.) Accidents, you understand, are the qualities of bodies. The sphericity and yellowness, and all the qualities which make up an orange, are its accidents. But they must (it is thought) be accidents or qualities of something. It will not do to say they are qualities of the orange, for orange is only a name for all these qualities in conjunction. Yet they must inhere in something. This something is that mysterious metaphysical phantom which haunts the mind of every philosopher; and which you will hear more of before we have done.

Sect. 5. The following passage must suffice for our <sup>Infinity.</sup> notice of the chapters on time, expansion, number, and infinity. "What else are our ideas of eternity and immensity but the repeated additions of certain ideas of imagined parts of duration and expansion, with the infinity of number, in which we can come to no end of addition?" (Book ii. chap. 16.) The notion of infinity is also got by repeating finite ideas "without ever coming to an end of the addition." (Chap. 17.)

Sect. 6. Power is of two kinds, active and passive. The <sup>Power.</sup> one able to make, the other able to receive a change. It is from changes that we get the idea of it. "Since whatever change is observed, the mind must collect a power somewhere able to make that change, as well as a possibility in the thing itself to receive it." (Book ii. chap. 21.) Active power is of two sorts,—thinking, and motion. Our ideas of both are derived from reflection on what passes in ourselves. But while a body only imparts motion by its impulse, and thus "reaches not the production of the action, but the continuation of the passion," "barely by willing, barely by a thought of the mind," we have the beginning of motion.

Sect. 7. This leads naturally to a discussion upon the free- <sup>Freedom of</sup> <sub>the will.</sub> dom of the will. We have some excellent advice not to mistake words for things. Perceiving and preferring are often

spoken of as faculties of the mind, "a word proper enough if it be used, as all words should be, so as not to breed any confusion in men's thoughts, by being supposed (as I suspect it has been) to stand for some real beings in the soul that performed those actions of understanding and volition."

Liberty.

Of liberty he says: "To move or not to move according to the direction of his own mind, so far is a man free, &c. The idea of liberty is the idea of a power in any agent to do or forbear any particular action according to the determination or thought of the mind, whereby either of them is preferred to the other, &c. As it is in the motions of the body, so it is in the thoughts of our minds; where any one is such that we have power to take it up according to the preference of the mind, there we are at liberty."

Necessity.

"Wherever thought is wholly wanting, or the power to act or forbear according to the direction of thought, there necessity takes place." "Liberty, which is but a power, belongs only to agents, and cannot be an attribute or modification of the will, which is also but a power."

What determines the will.

"To the question, What is it determines the will? the true and proper answer is, the mind. For that which determines the general power of directing to this or that particular direction is nothing but the agent itself exercising the power it has that particular way. If this answer satisfies not, it is plain the meaning of the question, What determines the will? is this, What moves the mind in every particular instance to determine its general power of directing to this or that particular motion or rest? And to this I answer, the motive for continuing in the same state or action is only the present satisfaction in it; the motive to change is always some uneasiness."

Substance, Corporeal.

Sect. 8. Locke now retraces his steps and makes a closer investigation of substance. The mind takes notice that a certain number of simple ideas go constantly together, and "not imagining how these simple ideas can subsist by themselves, we accustom ourselves to suppose some

substratum wherein they do subsist, and from which they do result; which, therefore, we call substance." (Book ii. chap. 23.) Here the theological interest at once crops up. Locke is attacked by Stillingfleet, then Bishop of Worcester, for reducing "the being of substance" to a mere idea, "having no other foundation but the fancies of men." In a long letter to the Bishop, Locke replies, "I cannot be supposed to question or doubt of the being of substance till I can question or doubt of my own being." But though the "being" of substance is "safe and secure," "the idea we have, to which we give the general name substance, is nothing but the supposed but unknown support of those qualities we find existing, which we imagine cannot subsist *sine re substantive* without something to support them."

Sect. 9. "The same thing happens concerning the opera-<sup>Mind.</sup> tions of the mind, &c., which we, concluding not to subsist of themselves, nor apprehending how they can belong to body or be produced by it, are apt to think these the actions of some other substance, which we call spirit; whereby it is evident that, having no other notion of matter but something wherein those many sensible qualities which affect our senses do subsist, by supposing a substance wherein thinking, knowing, doubting, and a power of moving, &c., do subsist, we have as clear a notion of the substance of spirit as we have of body; the one being supposed to be (without knowing what it is) the substratum to those simple ideas we have from without, and the other supposed (with a like ignorance of what it is) to be the substratum of those operations we experiment in ourselves within."

Sect. 10. "The complex ideas we have of God and<sup>Idea of God.</sup> separate spirits are made up of the simple ideas we receive from reflection, *v.g.*, having, from what we experiment in ourselves, got the ideas of existence and duration, of knowledge and power, &c., when we would frame an idea, the most suitable we can, to the Supreme Being, we enlarge

every one of these with our idea of infinity, and so, putting them together, make our complex idea of God." Elsewhere (Book ii. chap. 1) he says, "All those sublime thoughts which tower above the clouds, and reach as high as heaven itself, take their rise and footing here; in all that good extent wherein the mind wanders, in those remote speculations it may seem to be elevated with, it stirs not one jot beyond those ideas which sense or reflection has offered for its contemplation."

Moral relations.

Sect. II. Locke explains moral relations on purely utilitarian principles. "Good and evil . . . are nothing but pleasure or pain, or that which occasions or procures pleasure or pain to us. Moral good and evil then is only the conformity or disagreement of our voluntary actions to some law, whereby good or evil is drawn on us by the will and power of the law-maker." (Book ii. chap. 28.) "Virtue and vice are names pretended and supposed everywhere to stand for actions in their own nature, right and wrong, &c. But yet, whatever is pretended, this is visible, that these names virtue and vice, in the particular instances of their application, through the several names and societies of men in the world, are constantly attributed only to such actions as in each country and society are in reputation or discredit, &c. Nothing can be more natural than to encourage with esteem and reputation that wherein every one finds his advantage, and to blame and discountenance the contrary."

Hitherto we have been presented mainly with an analysis of the mind's contents, with a view to prove that these are all derived through the senses from the outer world; simple ideas being effects upon our senses of "the qualities of bodies;" complex ideas being these simple ones variously conjoined and operated on by the mind. The chapters which follow on "Adequate and Inadequate," "True and False Ideas," serve to introduce us to a new phase of the inquiry, in which, as we advance, the chief interest of the whole will be found to centre. I

must preface this stage with the remark, that there are two kinds of qualities in bodies, called primary and secondary qualities. According to Locke (hereafter you will be offered reasons for differing with him), "primary qualities are such as are utterly inseparable from the body, in what estate soever it be." Of this kind are solidity, extension, figure, mobility, and number. The secondary qualities "are nothing in the objects themselves but powers to produce various sensations in us by their primary qualities." "Of this kind are colours, sounds, tastes," &c. (Book ii. chap. 8.) Both primary and secondary qualities, be it observed, come under the head of simple ideas. Primary and secondary qualities.

Well, then, as to "certainty," as to the truth of our knowledge, as to its correspondence with reality: "Our simple ideas are all real, all agree to the reality of things; not that they are all of them the images or representatives of what does exist," &c. (Book ii. chap. 30); this is only the case with primary qualities. "But though whiteness and coldness are no more in snow than pain is, yet those ideas . . . being in us the effects of powers in things without us, ordained by our Maker to produce in us such sensations, they are real ideas in us, whereby we distinguish the qualities that are really in the things themselves, . . . the reality lying in that steady correspondence they have with the distinct constitutions of real beings." As to complex ideas, these "must have a conformity to the ordinary signification of the name given them, that they may not be thought fantastical." "Those are fantastical which are made up of such collections of simple ideas as were really never united, never were found together in any substance, *v.g.*, . . . such as the centaurs are described." Real and fantastical ideas.

Up to this point Locke has been clear enough. You may or may not be disposed to agree with what you have seen of his doctrine, but it at least has the appearance of being intelligible. There seems to be no difficulty in understanding the theory that the mind is a blank at starting, and receives its simple ideas from the impact of

external objects upon the senses, and complex ideas by its own operations upon these simple ones. Every one's mature experience goes a long way to endorse this notion. It is also quite intelligible, *having supposed mind and the external world to be independent*, that the simple ideas thus impressed should be related to realities, although, in the case of secondary qualities, not copies of those realities. Obvious as all this may be deemed, a shadow of coming doubt is momentarily thrown across our path by the mere allusion to *fantastical* ideas. We are partly reassured by Locke's reply to the Bishop of Worcester; but the first sentence of the fourth book entirely dispels our self-complacency, and bewilders us with the effort to reconcile new statements with old.

*"Since the mind in all its thoughts and reasonings hath no other immediate objects but its own ideas, which it alone does or can contemplate, it is evident that our knowledge is only conversant about them."* (Book iv. chap. 1.) Bishop Stillingfleet, alarmed at the scepticism couched in this declaration, again remonstrates. Locke, despite his former pledges, replies: "Knowledge I find in myself, and I conceive in others, consists in the perception of the agreement or disagreement of the immediate objects of the mind in thinking, which I call ideas." (Third Letter.)

When the mind perceives the agreement or disagreement of two ideas immediately—as, for instance, that black agrees with black and disagrees with white—this is intuition. When immediate comparison is not possible, we obtain our knowledge by reasoning or demonstration.

If any doubt remained as to whether we had understood Locke's meaning—whether this fast-and-loose treatment of external objects was only apparent—whether it could really be meant that external objects might be nothing but ideas, the following would undeceive us. "There is indeed another perception of the mind employed about the particular existence of finite beings without us, which, going beyond bare probability, and yet not reaching perfectly to

Knowledge  
limited to  
ideas.

Idealism.

either of the foregoing degrees of certainty (intuition or demonstration), passes under the name of knowledge. There can be nothing more certain than that the idea we receive from an external object is in our minds; this is intuitive knowledge. But *whether there be anything more than barely that idea in our minds*—whether we can thence certainly infer the existence of anything without us which corresponds to that idea, is that whereof some men think there may be a question made.” (Book iv. chap. 2.)

This downright idealism, which Locke candidly gives expression to, is presently set aside with an appeal to common sense. “I ask any one whether he be not invincibly conscious to himself of a different perception when he looks on the sun by day and thinks on it by night.” And, “Is there no difference between dreaming of being in the fire and being actually in it?” The idealist, however, might answer, ‘I do not dispute your consciousness of the difference; but neither can you deny that the difference is, in the last resort, a difference between states of consciousness. What proof have you that ideas cannot differ to this or any other extent? Look at the ravings of a madman; and so on.’ Locke is fully aware of the delicacy of the situation, and himself forestalls the query, “How shall the mind, when it perceives nothing but its own ideas, know that they agree with things themselves?” (Book iv. chap. 4.) What shall be the criterion? Has he some crucial test withheld till now? How will he lay the spectre of doubt which he himself has raised? It may disappoint you to find that he has nothing to fall back on save his simple ideas; “which, since the mind, as has been shown, can by no means make to itself, must necessarily be the product of things operating on the mind in a natural way, which, by the wisdom and will of our Maker, they are ordained and adapted to.”

Mathematical knowledge is both certain and real. Mathematical know-  
ledge.  
“Yet, if we consider, we shall find that it is only of our own ideas. The mathematician considers the truth and

properties belonging to a rectangle or circle only as they are in idea in his own mind; for it is possible he never found either of them existing mathematically, *i.e.*, precisely true in his life."

Maxims and axioms not innate.

Again, Locke reverts to the subject of innate ideas, and examines whether the maxims and the axioms of mathematics, such as, Equals taken from equals the remainder will be equal, One and one are equal to two, &c., are innate. All these, as we might suppose, he derives from experience, arguing that universal truths are nothing but generalisations from particular ones. Such propositions as, The whole is equal to all its parts, "are no more than bare verbal propositions, and teach us nothing but the respect and import of names one to another." (Book iv. chap. 7.)

Trifling propositions.

Such general propositions as, What is, is, he calls trifling. This, and identical propositions "wherein the same term is affirmed of itself," amount to no more than this, "that the same word may with great certainty be affirmed of itself." (Book iv. chap. 8.) "We have the knowledge of our own existence by intuition; of the existence of God by demonstration; and of other things by sensation." (Book iv. chap. 9.)

Knowledge of existence.

Existence of a God.

"There is no truth more evident than that something must be from eternity. I never yet heard of any one so unreasonable, or that could suppose so manifest a contradiction, as a time wherein there was perfectly nothing; this being of all absurdities the greatest, to imagine that pure nothing, the perfect negation and absence of all being, should ever produce any real existence." (Book iv. chap. 10.) "If, therefore, we know there is some real being, and that non-entity cannot produce any real being, it is an evident demonstration that from eternity there has been something, since what was not from eternity had a beginning, and what had a beginning must be produced by something else." Now, we know there is real being, and moreover that it is "knowing and intelligent being." Our own existence proves this. But this knowing and

intelligent being could not have been produced by "things wholly void of knowledge and operating blindly." "For it is repugnant to the idea of senseless matter that it should put into itself sense, perception, and knowledge." Therefore, "we have a more certain knowledge of the existence of a God than of anything our senses have not immediately discovered to us," and that which existed from eternity was an eternal mind.

It may still be asked, Was matter co-eternal with this eternal mind? It naturally occurs to us that, since it could not be made out of nothing, it must be so. But, says Locke, your own thinking being is not eternal; that had a beginning. "If, therefore, you can allow a thinking being to be made out of nothing (as all things that are not eternal must be), why also can you not allow it possible for a material being to be made out of nothing?" If you object to the making of anything out of nothing as impossible because inconceivable, Locke asks whether the movement of your hand by your mind is conceivable, and bids you not make your comprehension the measure of possibility.

With regard to the existence of other things, "I think God has given me assurance enough of the existence of things without me, &c. It is plain those perceptions are produced in us by exterior causes affecting our senses, because those that want the organs of any sense never can have the ideas belonging to that sense produced in their minds." (Book iv. chap. II.) He again compares the strength of actual sensation with the idea of it, and points to the fact that the testimony of others confirms our senses.

Thus far Locke attacks scepticism on the grounds of common sense; but there remains one sceptical position which he is unable to force. "When our senses do actually convey into our minds any idea, we cannot but be satisfied that there doth something at that time really exist without us which doth affect our senses, &c. But this knowledge extends as far as the present testimony of

our senses, employed about particular objects that do then affect them and no farther. For if I saw such a collection of simple ideas as is wont to be called man existing together one minute since, and am now alone, I cannot be certain that the same man exists now, since there is no necessary connection of his existence a minute since with his existence now." To be sure, you will say, the man might be dead. This, however, is not Locke's meaning. He means that knowledge, properly so called, is limited to the direct testimony of our senses as in intuitions, or to demonstrations from those intuitive perceptions.

## LETTER III.

THE foregoing epitome offers five points of special interest:—(1.) The origin of Knowledge. (2.) The claims of Realism and Idealism. (3.) The foundation of Morals. (4.) The freedom of the Will. (5.) The existence of God. All alike depend ultimately upon the first. It will be my endeavour to convince you that Locke's method fails to explain the origin of knowledge. The object I have in view throughout is to refute Materialism, the back-bone of which is the sensational philosophy.

The first assumption Locke makes is that, mind and matter are numerically and substantially distinct. The grounds for the assumption are given at the latter end of the essay. But his whole theory of experience takes this postulate for granted. He proceeds with his explanation thus. The mind is an absolute blank. The first beginning of knowledge is from without. Matter acts upon itself, *i.e.*, upon bodily organs, and the impression upon these is continued to the brain. So far this agrees with what we know of the physical conditions of consciousness. But consciousness and its conditions are as different as fire and warmth. We do not get a whit nearer to the mystery by referring to one end of a nerve instead of the other. The impression made by an object on an organ of sense is, at the utmost, only one of the conditions of knowledge, *viz.*, that whereby the nervous ganglia are stimulated to change.

Where does consciousness begin? The question draws upon us confusion doubly confounded. Seek the answer in Locke's own statements. The mind at starting is "as

white paper." Then comes a sensation, which is such an impression or motion in some part of the body as produces perception. It is about these impressions that the mind first employs itself in such operations as perception. (Sect. 2.) *Sensation*, then, is a motion, and *perception* is the mental result. Quite consistent with this is the statement that, there is no perception unless the motion is continued to the brain. Thus far Locke and modern science are at one. This being the case, ideas are not coeval with, but subsequent to, sensation. By and by I shall point out that ideas are not even coeval with perception. These two facts are the goal of our first stage. They may seem hardly worth noticing; but eventually they will be found difficult to reconcile with Locke's most important conclusions, hence very fruitful in their general consequences.

We will deal with the physical aspects of the case first, then with the psychological, and finally with the metaphysical. Subjoined is a modern account of the mechanism of external perception. "The consciousness which any animal possesses of that which is taking place within or around itself is all derived from *impressions* made upon the extremities of certain of its nervous fibres, which being conveyed by them to the central *sensorium*, are there *felt*. Of the mode in which the impression, hitherto a change of *material* character, is there made to act upon the *mind*, we are absolutely ignorant; we only know the fact. Hence, although we commonly refer our various sensations to the parts at which the impressions are made,—as, for instance, when we say that we have a pain in the hand or an ache in the leg,—we *really* use incorrect language; for, though we may refer our sensations to the points where the impression was made on the nerve, they are really *felt* in the brain. This is evident from two facts,—first, that if the nervous communication of the part with the brain be interrupted, no impressions, however violent, can make themselves felt; and second, that if the *trunk* of the nerve be irritated or pinched anywhere in its course, the pain

which is felt is referred, not to the point injured, but to the surface to which these nerves are distributed. Hence the well-known fact that, for some time after the amputation of a limb, the patient feels pains which he refers to the fingers or toes that have been removed; this continues until the irritation of the cut extremities of the nervous trunks has subsided.”<sup>1</sup>

Any number of authorities might be cited to the same effect. But the above statements are disputed by no one, nor could they be more clearly put. The point established is this: between the external impact and the perception of it, an appreciable interval must elapse for the wave of molecular changes to pass by the nerve fibres to the nerve centres in the brain. Even the rate at which the “nerve-force” travels has been ascertained by M. Du Bois-Reymond to be about 100 feet in a second. In illustration of the fact, he tells us if a whale 90 feet long were harpooned in the tail, two seconds would elapse before the impression could first reach the brain by the sensory nerves, and return as impulse by the motor nerves to the tail. “The motion must be continued to the brain.” What is the consequence? It is this: *There is no immediate consciousness of an external world.*

Next, for the psychological part of the business. What is sensation? Locke answers, “The source of most of our ideas.” Well, there is no objection to that; only it does not tell us much. And as he is here explaining the origin of knowledge, as, moreover, we are told that sensation furnishes and suggests to the mind *all* the simple ideas, and that all complex ideas are compounds of simple ones, the whole contents of the mind (according to him) depend on these sensations. Therefore to slur these over is to evade the grand point which the whole stir is about. Writers may use language in any sense they please, provided their words always have a consistent meaning, and that we know what that is. By sensation, I understand

<sup>1</sup> Carpenter, *Animal Physiology*, § 486.

not a physical fact, not a wave of nerve-force, but a mental fact. True, the lowest type of mental fact, still mental. Plants, for instance, like the mimosæ, or like those marvellous orchids described by Darwin, exhibit signs of exquisite sensibility. Certain jellyfish shrink when a cloud obscures the sun. But the term sensibility is equivocal here. There is here no sensation. There is no more feeling (at least, we have not the faintest reason for supposing there is) than in the case of a solution which crystallises at the touch of a feather.<sup>1</sup> What we want to know is: How does motion become feeling? This is what we have a right to ask of any one who offers us an explanation of the *origin* of knowledge, which explanation involves the assumption that motion does become feeling. Dr. Maudesley says, rather scornfully, "Some popular capital has been made, and made in quarters where we might justly have looked for greater sincerity (!) or sounder apprehension, out of the fact that physiology, however far it may advance, can never bridge over the gap between nerve elements and mind, can never leap from movements of nerve molecules to consciousness. No one has ever said they could. The *how* or *why* is a mystery which we do not pretend to explain; we do not even aspire to know it."<sup>2</sup> Even so: and it is just because it is a mystery that the transcendentalist objects to the semblance of explanation in calling mind a property of matter; and in saying, "Matter rises in dignity and function until its energies merge insensibly into functions which are described as mental."<sup>3</sup> But of this more anon. We have not yet done with the very remarkable, not to say unique, character of this so-called function of matter—sensation. We do aspire to know a little more about it yet.

<sup>1</sup> Robinet in France, Ueberweg in Germany, Alfred Barratt and W. K. Clifford in England, amongst others of inferior note, held the doctrine of hylozoism, *i.e.*, that every

particle of matter is animated. This is the belief of Professor Häckel.

<sup>2</sup> *Mind and Body*, p. 123.

<sup>3</sup> *Ibid.*

“The lowest or most restricted form of sensation,” says Mr. Bain, “does not contain an element of knowledge;”<sup>1</sup> for although “a conscious element of the mind,” mere consciousness is not knowledge. Something further must be called in before sensation is *perceived*, and hardly then is it to be called *knowledge*. Let us look into this. “As change of impression is an indispensable condition of being conscious, or of being mentally alive either to feeling or thought, every mental experience is necessarily twofold. We can neither feel nor know heat except in the transition from cold.”<sup>2</sup> “We are never conscious at all without experiencing transition or change.”<sup>3</sup> “It is admitted on all hands,” says Mr. Spencer, “that without change consciousness is impossible.”<sup>4</sup> “The lowest form of consciousness that can be conceived is that resulting from the alternation of two states.”<sup>5</sup> Before we examine the steps by which sensation becomes cognition or knowledge, we will analyse the process of nerve-changes becoming sensation.

Being a “mental experience,” sensation is necessarily twofold. It cannot be felt as itself, *i.e.*, as either pleasant or painful, or anything else, until it is felt as different from another feeling. What does this imply? It implies that before a primary sensation can become such, there must combine with it a primary consciousness of a relation of difference, and a recollection of something that never existed. Where does this consciousness of difference come from? How is the relation established? The states of nerve matter themselves cannot establish a relation between two sensations before they become sensations themselves, before any sensations exist to be related; and how can a sensation which has had no antecedent, *qua* sensation, become a sensation through its difference with nothing? If you reply, It differed, at all events,

<sup>1</sup> *The Emotions and the Will*, p. 586.

<sup>2</sup> *The Senses and the Intellect*, p. 9.

<sup>4</sup> *Principles of Psychology*, vol. ii. § 377.

<sup>3</sup> *Ibid.*, p. 325.

<sup>5</sup> *Ibid.*

from non-sensation; I rejoin, Non-sensation equals nothing to us; it could never be known, and therefore could not be retained in memory so as to form one of the related terms.

Leaving this difficulty, which materialists are contented to dispose of under the convenient name of "mystery," we have the further mystery to inquire into, how sensation, when we get it, becomes perception, and finally knowledge. "To constitute a consciousness, however, incessant change is not the sole thing needed. . . . Consciousness is not simply a succession of changes, but an *orderly* succession of changes—a succession of changes *combined and arranged* in special ways. The changes form the raw material of consciousness, and the development of consciousness is the organisation of them."<sup>1</sup> This sounds a complicated affair. Mr. Bain may perhaps make it clearer for us. "We must be discriminatively conscious of different mental states before either *perceiving* or knowing in any acceptation."<sup>2</sup> Perception is feeling and something more. It involves experience. "The intellect participates in every act of perceiving, . . . The recovery of the past sum-total of sensibilities of redness, orange, blue, of the sound of a bell or a voice, of the touch of marble or the taste of a peach, being in each case an effect far exceeding the special range of the new encounter by itself, we are at liberty to style the mental state thus produced a perception, or something transcending the mere sensation as narrowed to the shock of the moment."

But even when we have got to this, we still have not reached cognition. "Knowledge is far from being co-extensive with sensation, or with distinguishable consciousness (which amounts to perception)." "To be simply impressed with a light, sound, or touch, is not to know anything in the proper sense of the word; knowledge

<sup>1</sup> *Principles of Psychology*, vol. ii. § 378.

<sup>2</sup> *The Emotions and the Will*, p. 586.

begins when we recognise other things in the way of comparison with one."<sup>1</sup> To know anything at all, I must know it as contrasting with other things, *and* as agreeing with itself. This is an apple because it resembles other apples, and differs from pears, plums, &c. Is all this a function of matter? The materialist confidently answers yes. We shall dispute the point with him by and by. Meanwhile, you observe, our remarks about sensation apply with equal force to developed knowledge; for, as Mr. Bain says, "knowledge necessarily implies relation;" and Mr. Spencer, "We have found that our intellectual operations consist in the establishment of relations among the primitive and undecomposable states of consciousness." But, says the transcendentalist, these undecomposable states of consciousness postulate this establishment of relations just as much as the decomposable. All that has been advanced proves that, along with the physical changes which the materialist affirms do by some hocus-pocus become feeling, we have to assume the further astounding mystery that the relations of difference and agreement are given in the very first beginning of consciousness. In the words of Mr. Spencer, "The life of the lowest sentient being is made possible only by an organic classification of impressions."<sup>2</sup> It must know the difference between nutritive and innutritive matter, when to fight or flee.

The result of the inquiry is that Locke's *tabula rasa* breaks down as a theory of the origin of knowledge, and Leibnitz was right in his belief that mind is primarily active, not passive.

<sup>1</sup> *The Emotions and the Will*, p. 590.

<sup>2</sup> *Ubi supra*.

## LETTER IV.

OUR first stage brings us to this : ideas are not, as Locke affirms, coeval with sensation. There is no feeling, no conscious sensation, until the changes in the nerve fibres reach the nerve centres in the brain. There is, therefore, no *immediate* consciousness of anything except *change of feeling*. This, although vital to the consideration of the beginning of knowledge, will presently be shown to be still more deeply significant in its bearing on the relativity of knowledge ; hence, on the second of our cardinal points of interest—the dispute between Realism and Idealism. But the grand all-important result reached in the last letter,—that which goes to the very marrow of the “origin of knowledge” question—that which is one of the two sharpest weapons of the mentalists,—is the primary activity of mind,—the “organic classification” which mind superinduces upon feeling,—the mental contribution without which the excitation of nerve matter, even when transformed into feeling, could never become perception in the zoophyte or knowledge in man.

We pass to the next phase of original knowledge, which leads us forward to the investigation of Realism. “Simple ideas are those produced by the qualities of bodies that affect our senses.” Locke calls them “simple” because they enter the mind unmixed, as the hand feels softness and warmth in the same piece of wax. I shall say no more about the perception of these particular sensations, how softness is distinguished from hardness, and warmth from cold, &c. Nor need I comment upon the assertion that “the mind in respect of its simple ideas is wholly

passive." What I shall direct your attention to is the statement that simple ideas are produced by the qualities of bodies; that simple ideas are all from things themselves; and all agree to the reality of things. At first glance it must occur to every one, as it occurred to Locke, that "since the mind in all its thoughts and reasonings hath no other immediate objects but its own ideas which it alone does or can contemplate, it is evident that our knowledge is only conversant about them." (Book iv. chap. 1.) Consequently to assert that "the materials of all our knowledge"—simple ideas—are not only "all from things themselves," but "all agree to the reality of things," and, in the case of primary qualities, are images or representatives of those things,—to assert this is to go a very long way beyond what there is any warrant for. Nay, we shall see by and by that, so far as "steady correspondence" goes,—so far as reality goes,—we have the most perfect and demonstrative proof that there neither is, nor can be, anything more radically incommensurable than the idea, and the external thing which it is held, I will not say to represent,—I will go further and say, to symbolise.

The doctrine of Realism is pretty nearly synonymous with the doctrine of Common Sense, the gist of which is that things are what they seem. Kant, I think, has remarked that common sense in philosophy is little better than common nonsense. At any rate, although the philosophical doctrine of Realism does not actually go the length of popular conviction, the scientific materialist practically does so completely. To the metaphysician, Realism signifies that the ego and non-ego—mind and matter—are both *immediately* known. Science and Realism proceed on the assumption that matter is practically what it seems. It being the business of science to analyse and compose, to measure and to weigh, it has clearly nothing to do with things but as they seem; that is, with what, in philosophical language, are called phenomena. It is the

boast of Positive Philosophy, which sets itself up as the archetype of the scientific method of the future, that it restricts research exclusively to the *laws* of phenomena. My object is to point out to you that the scientific method, working upon this realistic principle, is incompetent to deal with the problems of mind; also that, when it pretends to do this, it convicts itself of the grossest paralogisms.

Ere we examine how far Realism is justified in the assumption that "simple ideas," or any other ideas, are produced by the "qualities of bodies," we must say a word about bodies themselves. By "bodies" is usually meant external objects—generalised, if you please, under the term matter as opposed to mind, or as the non-ego in antithesis to the ego;—the material world, in short, as we all think and speak of it on ordinary occasions. But in the eyes of the metaphysician, body signifies this and a good deal more. The additional meaning makes its appearance at the outset of Locke's essay. For, the explanation of simple ideas, as produced by the "qualities of bodies," is a hint that bodies and their qualities are not identical; that the orange is not its yellowness, for instance, (since an orange may be green, &c.) Yet, notwithstanding this, the colour must inhere in something. This something is the substratum or substance, which Locke deemed as "safe and secure" as his own being; but which, when pressed by Stillingfleet, he allows to be "nothing but the supposed but unknown support of those qualities we find existing."

The Bishop of Worcester probably thought that any doubt about the independent existence of matter imperilled belief in a created world. A far greater metaphysician than the Bishop of Worcester—Bishop BERKELEY—saw very clearly that the real danger lay exactly in the opposite quarter. Grant the independent existence of matter, and there is no escape from materialism. Locke, in spite of the dualism upon which his system wholly

depends, had felt himself compelled to admit that the mind "hath no other immediate object but its own ideas." Berkeley seized upon the admission, and boldly denied the existence of any material substratum whatever. He did not deny the actual reality of the qualities, but he reduced them all to ideas and feelings. And having reduced these "qualities"—which is all we know of an external world—to purely mental facts, he drew what seemed to him the legitimate conclusion that, their very existence depends on some mind or other perceiving them. "What," he asks, "do we perceive besides our own ideas or sensations? and is it not plainly repugnant that any one of these, or any combination of them, should exist unperceived?"<sup>1</sup> He admitted, just as much as any one, the difference between "ideas of sense" and sheer "ideas,"—the difference between sensation and the mere thought of it. "That the things I see with mine eyes and touch with my hands do exist, really exist, I make not the least question. The only thing whose existence we deny is that which philosophers call matter or corporeal substance."<sup>2</sup> It is not simply that the thought or recollection of a feeling is fainter than the sensation itself; not merely that the "ideas of sense" are more strong, lively, and distinct; "they have likewise a steadiness, order, and coherence, and are not excited at random, as those which are the effects of human wills often are, but in a regular train or series." "Whatever power I may have over my own thoughts, I find the ideas actually perceived by sense have not a like dependence on my will. When in broad daylight I open my eyes, it is not in my power to choose whether I shall see or no, or to determine what particular objects shall present themselves to my view; and so likewise as to the hearing and other senses; the ideas imprinted on them are not creatures of my will. *There is some other will or spirit that produces them.*"<sup>3</sup>

<sup>1</sup> *Of the Principles of Human Knowledge*, § iv.

<sup>2</sup> Section xxxv.

<sup>3</sup> Section xxix.

This last sentence is the essence of the whole treatise. For example, the sensation we call resistance when it persists independently of my will,—I am not the cause of this sensation, but what is? It must have a cause, yet Berkeley has got rid of material substance. Some other will or *spirit* is the cause. All things, argued Berkeley, being in their last analysis reducible to ideas and sensations, depend for their existence on being perceived, consequently on a mind perceiving them. The cause of this or that sensation is not my mind, nor is it matter, for that is a mental fiction. The real cause is the only real substance—Eternal Mind. Things persist independently of my mind and all finite minds, whether these perceive them or not; for *God is eternal*, and in his eternal perception the *permanence* of the universe has its being. “To me it is evident,” says *Philonous*,<sup>1</sup> “that sensible things cannot exist otherwise than in a mind or spirit. Whence I conclude, not that they have no real existence, but that, seeing they depend not on my thought, and have an existence distinct from being perceived by me, *there must be some other mind wherein they exist*. As sure, therefore, as [the sensible world really exists, so sure is there an infinite omnipresent Spirit who contains and supports it.”

This glimpse of Berkeley will give us a clearer insight into Locke's opinion of body. If we refer to what Locke says of substance, we shall find he seems a little shy of it; as if he did not quite know whether to commit himself to decided language. In Sect. 4, it was those who ran into the notion of accidents who were forced to find out the word “substance” to support them. In Sect. 8, we accustom ourselves to suppose a substratum. At one time we have him assuring the Bishop of Worcester that the being of substance is safe and secure; at another he says substance is nothing but the supposed and unknown support of those qualities we find existing which we *imagine* cannot subsist *sine re substantive*. Still there is

<sup>1</sup> Berkeley's *Second Dialogue*.

no mistaking Locke's thorough realism. He is as sure of the being of substance as he is of his own being. (Sect. 8.) His system could not stir a peg without assuming the reality of substance; and in addition to this, such simple ideas as solidity, extension, figure, mobility, and number, the primary qualities of matter, are known to us as they really are;—produce in us ideas which correspond to their actual being. "The ideas of primary qualities are resemblances of them, and their patterns do really exist in the bodies themselves." (Book ii. chap. 8.)

How can this be? How can an idea be like a thing, which is only known to be a thing because it is unlike an idea? The concluding words of the sentence are, "But the ideas produced in us by these secondary qualities [of which he has been talking] have no resemblance to them at all." Of course not. Every one knows, if we had more senses, objects would have more properties for us. With different senses they would appear different, as ripe strawberries are, to the colour-blind, of the same hue as their leaves. With fewer senses qualities now perceived would cease to be so, as things lose taste and smell when we have a cold in the head. But if colour, taste, odour, sound, are only affections of our senses, are only feelings, what else are resistance, extension, number, &c.? Are they too not known as sensations, and as sensations only? The only difference between primary and secondary qualities is that the first are known to us as muscular sensations or feelings of movement. "Extension, figure, solidity, and inertness are modes of our own active energies."<sup>1</sup> The secondary are due to sensation proper. Setting aside, however, the assertion that the ideas of primary qualities and their patterns resemble one another, how do we know, how does Locke know, anything about the "bodies themselves" in which these patterns "do really exist?" How out of mere feeling do we get a product that is not feeling? How out of a "single perception," as Hume puts it, do we get "a

<sup>1</sup> *The Emotions and the Will*, Appendix.

double existence;”—our own feeling, and body as the cause of it? The first pit Locke falls into is one of his own digging. Having laid it down that complex ideas are compounded of simple ones, he proceeds presently to derive simple ideas from complex. 'Tis thus he stumbles. Primary qualities are the causes and “patterns” of simple ideas. Body or substance, however, being the substratum we are forced to invent for their support, is manifestly an after-thought; it is an idea “framed by the mind;” which no simple idea, according to Locke, can possibly be. It is, therefore, a complex idea. Consequently the idea of body, which is complex, is derived from primary qualities which are the pattern of simple ideas. So far so good. But if the idea of body be derived from primary qualities, whence the notion of the primary qualities, as qualities of body? There's the rub! Locke gets the notion from bodies. “They are called real, original, or primary qualities because they are in the things themselves, whether they are perceived or no.” (Book ii. chap. 8.) Because they are in the things themselves! And elsewhere, “*sensation* convinces us there are solid extended substances.” (Book ii. chap. 23.)

Locke has a good deal to say about solidity; (Book ii. chap. 4), which, as a synonym for resistance, may be taken as the most fundamental conception of body. What does he make of it? “If any one ask me what this solidity is, I send him to his *senses* to inform him. Let him put a flint or a football between his hands, and then endeavour to join them, and he will know.” (Book ii. chap. 4.) What then? Is not this convincing sensation—the sensation of touch—as much a feeling, as much a mental fact, as the taste of vinegar, and which neither Locke nor any thinking person would suppose to be a ‘pattern’ of anything in the vinegar itself? “'Tis easy,” says Hume, “to observe that though bodies are felt by means of solidity, yet the feeling is a quite different thing from the solidity, and that they have not the least resemblance to each other.”<sup>1</sup>

<sup>1</sup> *A Treatise of Human Nature*, Part iv. Sect. 4.

This then is Locke's theory of external perception; the idea of primary qualities is "all from things themselves, it not being in the power of the most exalted wit to frame one new simple idea." And the idea of these "things themselves" is all from the idea of primary qualities, or what amounts to the same; all from affections of our senses, which either are or become simple ideas, which, in turn, are patterns of these primary qualities. So each is derived from the other. Body accounts for sensation (*i.e.*, external perception), and sensation accounts for body. This was the ultimate point reached in Sect. 17. Simple ideas were set up as their own guarantee for corresponding reality. Since the mind can by no means make to itself one simple idea, simple ideas "must necessarily be the product of things operating on the mind in a natural way."

## LETTER V.

WE have seen that consciousness of the primary sensations, which are the elements of all ideas, implied the establishment of relations between these undecomposable states themselves. The beginning of consciousness involved a conscious relation of difference: change of feeling was essential to feeling at all. We have seen that when we get a step beyond sensation,—when we get to perception, the relation of resemblance must be added to that of difference: “Organic classification” is involved. We have seen that the original and inherent activity of the mind, which these facts peremptorily call for, is quite incompatible with Locke’s theory of a *tabula rasa*. We probed Locke’s attempt to explain the origin of knowledge on the realistic theory of an independent entity, called “matter,” operating upon another independent entity, called “mind.” This attempt, so far as we looked into it, proved a failure, because the realistic theory itself had nothing to support it. Instead of this theory being a rock to build upon, it turned out a quicksand. Up to this point it has landed us in Idealism. The only proof Locke had to offer for the soundness of his Realism, on which rests the doctrine that sensation, as a product of motion, is the source of all our ideas, is sensation itself. But sensation, as we have seen, is demonstrably felt only in the brain, and is, in every sense of the words, nothing but an inward feeling.

We have not done with body yet. If the realist’s theory of mind and matter be true, it follows that the brain-changes set up by external objects become first, feeling,

then perception or consciousness of that feeling as distinguished from other feelings, and then reference to something essentially different from the feeling as the cause of the feeling. Out of this last stage of his evolution we have the double mystery of self and not-self; for, the relation of difference necessitated by the most elementary feeling is evidently necessary to more complicated states of consciousness; an outer world has no meaning but as opposed to an inner. This double mystery is again doubled. The idea of body supposes, first, relations of cause and of difference; secondly, it supposes an idea of continued existence, which is essential to the idea of body. The idea of self, on the other hand, equally supposes an idea of continued existence. Not to dwell upon the impossibility of accounting for the idea of continued existence as given in or derived from sensation, which is itself casual and transient, let us return once more to the mysterious fact of the relation of difference requisite to every conscious state.

To pass over the absurd contradiction that the first and simplest conscious state gratuitously begs the memory of an unknown fact—a fact of which we have never been conscious—let us for the moment suppose that the first of the series was known by itself; how are we to deal with subsequent states? This first state (indeed any state might be taken) could only be compared with its consequent by being represented in consciousness simultaneously with it. That is, we must allow of two different states of consciousness at the same time. But if so, how can the first in order, being present, be known as past? Is it said, they overlap each other?—that the second change begins before the first is ended? But to whatever extent they do this, they must both be known as present. To whatever extent they do not do this, the first, if known at all, must be known both as present and past. The conclusion is, that, besides this additional instance of “mystery,” which is absolutely beyond the

reach of sensationalism, we have incidental, and curious evidence too, that the ordinary and realistic conception of Time is a delusion. For we stumble upon an indubitable fact, which being inconceivable (in the proper sense of that word), must be regarded as transcending experience. This fact, which cannot be realised in thought, but which nevertheless must be true, is that consciousness, comparison, memory, all thinking, in short, implies that successive states of mind are also synchronous states; that past is both past and present; that time relations, as we apprehend them, are illusive; in other words, that time is not what we take it to be.<sup>1</sup>

The deeper we look into the affair, the more impossible it becomes to explain the origin of knowledge by the assumption of two distinct and separable entities—Matter and Mind. Nor is the realist of the day—say Mr. Spencer, for example—less palpably at fault than his great predecessor. Mr. Spencer only more lucidly demonstrates the weakness of his Realism when he assures us that, “in the *very first* phenomena of a *nascent* consciousness there are involved the materials of those fundamental relations,” viz., likeness and unlikeness; and adds, “Not, of course, that there is any consciousness of external differences and similarities, but that there is in the organism an innate capability of acting thus, according to the nature of the stimulus, and that, in so far, the organism has a power of appreciating differences and similarities—a power of automatic classification.”<sup>2</sup> We have seen that, although easy to write, this is impossible to conceive. The plausibility of the statement consists in slurring over the passage from unconsciousness to consciousness. The old puzzle remains exactly where it was. We have to assume that “that which was nothing, viz., an unperceived change, becomes something—a perceived change—by constant repetition.”<sup>3</sup> Yet, despite impossibilities, Mr. Spencer con-

<sup>1</sup> See Herbert, *Modern Realism Examined*, p. 291.

<sup>2</sup> *Principles of Psychology*, chap. xxv.

<sup>3</sup> See T. H. Green's *Introduction to Hume's Treatise*, § 22.

fidently lays it down "that the current belief in objects as external independent entities has a higher guarantee than any other belief whatever; . . . that, judged logically as well as instinctively, Realism is the only rational creed; and that all adverse creeds are self-destructive."<sup>1</sup>

In his chapter on consciousness in "The Emotions and the Will," Mr. Bain, referring to the dispute between Locke and Leibnitz, says, "The reference of many of those elementary notions, such as extension, figure, solidity, to the muscular system, alters entirely the state of the question as originally propounded. If sensation includes all that we derive from the feelings of movement, the first thesis [that all knowledge is derived through sensation] would not be difficult to maintain: exclude movement, and we render it wholly untenable." Mr. Bain's point is this: that we are endowed with a sense of "muscularity," or muscular feeling proper, which is quite distinct from sensation proper. "The one is associated with energy passing outwards, and the other with stimulation passing inwards."<sup>2</sup> Whenever muscular contraction takes place, this is accompanied by special and appropriate feeling. We are conscious of different degrees of expended energy. Resistance, for instance, is apprehended and measured by the amount of exertion it calls forth. The notion of surface is got, partly by the sense of touch proper, partly by the feeling connected with movement. "Moving in one direction, we get the length, in the cross direction we bring other muscles into play, and get an impression of movement on a different portion of the moving system." A

<sup>1</sup> *Ubi supra*, § 13.

<sup>2</sup> *The Senses and the Intellect*, ch. i. See T. H. Green's *Introduction to Hume's Treatise*, Sect. 22, where he speaks of "the attempts that have been made since Locke to show that mere sensations, dumb to begin with, may yet become articulate upon repetition and combination; which, in fact, endow them with a faculty

of inference, and suppose that, though primarily they report nothing beyond themselves, they yet somehow come to do so as an explanation of their own recurrence." I have availed myself on every convenient occasion of Mr. Green's elaborate analysis of Locke. To the student of philosophy his writings are of incalculable value.

cubical block exemplifying all the three dimensions gives rise to a new direction of the hand, and exercises a new class of muscles, the result of which is the feeling of *solidity*. Mr. Bain's theory is that, the perception of an external world "implies our own energy." "Solidity, extension, and space—the foundation properties of the material world—mean, as has been said above, certain movements and energies of our own bodies, and exist in our minds in the shape of feelings of force allied with visible and tactile and other impressions. The sense of the external is the consciousness of particular energies and activities of our own."<sup>1</sup>

Mr. Bain is so sound a thinker and so careful a writer, that one criticises his utterances with diffidence. Still I fail to see how the above explanation can account for the *origin* of our idea of the material world. In referring this belief in its ultimate analysis to movements of our own *bodies*, we must assume the belief in question to exist already. Our bodies are just as much part of the external world as the food which nourishes them. Indeed, we are told these movements exist *in our minds* in the shape of feelings. This is the old stumbling-block which Realism is unable to surmount. The truth is, the impossibility of applying suitable language in explanation of that which transcends philosophical research must involve the theorist in contradictions.<sup>2</sup>

In the foregoing criticism it has transpired that, the duality of mind and matter, upon which Locke and the whole Realistic school build their doctrine, is taken for granted at the outset, in order to explain that duality itself, which sensation could never give; the existence of

<sup>1</sup> *The Senses and the Intellect*, p. 379.

<sup>2</sup> Mr. Bain differs entirely with the opinion so strongly expressed by Mr. Spencer. He speaks of the Realistic creed as "simply irrelevant," and says, "It is a crude, figurative mode of expressing the

greatest distinction we can draw within our conscious life; it suits the commoner purposes of mankind, but is, in my opinion, altogether unworthy of the name of philosophy." Mr. Bain's own views upon the subject are given in the Appendix to the "Senses and the Intellect."

matter is accepted as known, in order to account for our knowledge of its existence. It also turned out that, the primary perception of matter involves primary consciousness of the relations of difference, and of cause, and of substance; and while the relation of difference calls for a recollection of something which has never been felt or known, the relations of cause and of substance are both conceptions, which, on the theory of a gradually evolved consciousness, could not be primitive. It appeared, too, that the most modern theory of Evolution, the very cornerstone of which is Realism, in offering us the explanation of a gradually developed consciousness, has to endow repetition with the attributes of a Creator—has to discover in the multiplication of complex movements a something which is not movement at all—a something whose difference from matter, in the language of Mr. Spencer, is “a difference which transcends all differences.” Thus far, philosophically considered, Realism has certainly not the best of it in its dispute with Idealism. Of course, from the scientific point of view, and for the practical business of life, Realism is the legitimate and only possible creed. Applied to speculative opinions, it is (as will become more and more evident) the falsest of deceptive hypotheses.

The explanation of the origin of knowledge upon dualistic principles is an attempted explanation of the connection between matter and mind. Its almost invariable outcome is materialism. Now the sole intent of these letters is theological. Every point we discuss must bear upon this one design. It is needless to say we can have no more appropriate topic than the one in hand. Not that materialism necessarily leads to atheism. Descartes was no atheist; neither was the priest Gassendi. There are plenty of living materialists who believe that matter in the form of the most complex organisation is capable of mental functions; or who, like Robinet, attribute sensation to atoms (1761), and yet refer the mys-

tery to a Supreme Intelligence. Many will say, "Why may not matter, indeed, be capable of consciousness, seeing that, whether it be or not, the mystery is equally incomprehensible to us, and must be reckoned equally simple and easy to the Power which created matter and its properties?"<sup>1</sup> Nevertheless this is not the opinion of the general. It would be safer to look to the atheistic writers, and trace their religious creeds back to their philosophy, if we would understand how intimately materialism and dogmatic atheism are related. Dr. Büchner, relying upon the absolute truth of Realism, repudiates both God and moral freedom. "The world as matter with its properties *must* have existed from eternity, and must last for ever—in one word, the world cannot have been created." Speaking of free-will and the "new science of statistics," he says, "Taken collectively, they (the phenomena) exhibit a strict order, inexorably ruling men and humanity."<sup>2</sup>

Another materialist, alluding to mind as the ultimate cause of things, writes: "There is no need of any such hypothesis [as that of a God] at all, cosmic harmony resulting as a physically necessary consequence from the combined action of natural laws, which in turn result as a physically necessary consequence of the persistence of force and the primary qualities of matter."<sup>3</sup> The majority of materialists would, I feel sure, agree with Physicus when he congratulates himself (with an assurance that never fails him) on having "clearly shown that the advance of science has now entitled us to assert, without the least hesitation (!), that the hypothesis of mind in nature is as certainly superfluous to account for any of the phenomena of nature, as the scientific doctrine of the persistence of force and the indestructibility of matter is certainly true." "If it be conceded that the universe as a whole is infinite

<sup>1</sup> Dr. Maudsley, *The Limits of Philosophical Inquiry*.

<sup>2</sup> *Force and Matter*.

<sup>3</sup> *A Candid Examination of Theism*, by Physicus, p. 109.

both in space and time, the concession amounts to an abolition of the final mystery of things. . . . That there is a rational mystery, in the sense of there being something which can never be *explained*, I do not dispute; all I assert is that this mystery is inexplicable, *because there is nothing to explain.*" Although Physicus is able to arrive at this remarkable conclusion "without the least hesitation," the rest of the world are forced to believe in the mystery; and will never, I suspect, accept this learned gentleman's solution of it. Whatever evolution may do for the brain of man, the connection between that brain and the mind of which it is the organ must remain to the very last as mysterious as it is now.<sup>1</sup> The realist, postulating nothing more than the persistence of force and the indestructibility of matter, undertakes to explain all there is to be explained. Let us see with what success he establishes these proud pretensions.

<sup>1</sup> In his *Limits of Natural Knowledge*, Professor Du Bois-Reymond affirmed that the mechanical explanation of consciousness not only is, but will for ever be, inconceivable. Professor Hæckel, with no little indignation, declared this to be "essentially a complete denial of the facts of evolution," in that Du Bois-Reymond had not reflected that

man would, in course of time, reach an organisation as high above his present as this is above that of his progenitors in early geological ages. Professor Du Bois-Reymond replies, "However rapid or slow may be the progress of the human brain, it must remain within the given type." (*Die Sieben Welträthscl.*)

## LETTER VI.

No one that I know of has put Realism to such searching ordeal as the late Thomas Martin Herbert. He has, one would imagine, taken his cue from Lange, who had gone over the same ground, though more cursorily than Herbert, and with nothing like the care and method of the latter.<sup>1</sup> We shall have frequent occasion to refer to Lange. For the present, we will devote ourselves to the English writer.

Herbert begins his work with a statement of the scientific conception of the universe: "Each elementary substance consists, we are told, of molecules, definite and unalterable in size and shape, &c. Compound substances are aggregates of compound molecules," &c. Quite in agreement with this theory of molecular physics is the doctrine of the persistence of force, which plays the mighty part in Nature above described. "The various forms of energy existing in the material universe are supposed to constitute a grand store of force, which never suffers diminution or increase; but whenever a certain amount of energy ceases to exist in one form, exactly that quantity is converted into one or more of the other forms, through a series of transformations which proceed for ever, and manifest themselves in the endless changes of the world." (Chap. i. § 2.) The operations of physical energy consist of the movements of matter in every instance that we are able to investigate, as the study of molecules would lead us to expect. We cannot even figure to our minds any change of

<sup>1</sup> Lange died in 1875, soon after the completion of his *History of Materialism*. Herbert died in 1877, before his *Modern Realism Examined* was published.

matter that is not resolvable into motion. Thus heat (as a property of bodies, not the sensation) is a molecular agitation. Light consists of ethereal undulations, waves of different lengths answering to different colours. In like manner, electricity and magnetism are represented to us simply as matter moving in certain special ways. Chemical changes again are revealed to us only as movements. Acts of muscular energy consist of contractions; acts of nerve-force of movements in the nervous organism, both accompanied by the waste of tissue and necessitating its repair; processes which are forms of chemical change. Herbert here quotes Dr. Huxley as follows: "If there is one thing clear about the progress of modern science, it is the tendency to reduce all scientific problems, except those which are purely mathematical, to questions of molecular physics; that is to say, to the attractions, repulsions, motions, and co-ordination of the ultimate particles of matter."<sup>1</sup> Herbert supposes all this to be too well known to require detailed exposition. This may not apply to the "man of business." If, however, you are sated with the subject, you can omit the two following letters.

The importance of a principle which professes to abolish the final mystery of things can hardly be exaggerated. If the persistence of force and the indestructibility of matter, or "the primary qualities of matter," according to Physicus, account for everything, and are themselves no mystery *because* they do this, or because they exist, which is the same thing, we may well devote a little consideration to so stupendous a fact. I will first add a few words in illustration of these scientific doctrines, and will then proceed to criticism. Briefly stated, the persistence of force means, that although the quality of force is always undergoing change, the quantity in the universe is unalterable. At first sight this may not command assent;

<sup>1</sup> *Lay Sermons*, p. 183.

it might seem, for instance, that the force required to wind up the weight of a clock would come to an end when the weight, having run down, was at rest. But the weight at rest loses nothing of its gravity. If it rest upon the ground, molecular changes would be set up by pressure and resistance both in the weight and in the supporting body; if the weight were suspended, corresponding tension would be produced on the cord; if again raised, it would again, in descending, move the wheels and hands of the clock. What was dynamical or actual energy has become statical energy; there is no diminution of the original sum of force. "It may be objected," says Sir W. Grove, "if tension or static force be thus motion in abeyance, there is at all times a large amount of dynamical action subtracted from the universe. Every stone upon a hill, every spring that is bent and has required force to upraise or bend it, has for a time, or possibly for ever, withdrawn this force and annihilated it. Not so! What takes place when we raise a weight and leave it at the point to which it has been elevated? We have changed the centre of gravity of the earth, and consequently the earth's position with reference to the sun, planets, and stars; the effort we have made pervades and shakes the universe; nor can we present to the mind any exercise of force which is not thus permanent in its dynamical effects."<sup>1</sup> Suppose I shoot an arrow from a bow, the velocity of the arrow is the transformed force which I imparted to the bow in bending it. When I wind up my watch, I bestow upon the coiled spring the moving force which keeps the watch going for the day. The ticking of my watch this morning represents some measure of the energy which was in my arm last night. There is here no additional force created; the entire force in both cases, and the whole of the work done, proceeds from my body. Do you imagine that when the force is expended, when the watch and arrow are at rest, the original energy is annihilated? Not so! In bending

<sup>1</sup> *Correlation of Physical Forces.*

the bow or in winding up the watch, the work done by me in overcoming the resistance, in changing the configuration of the bow and the spring, set up all sorts of mechanical and chemical changes in my body, which were communicated to the surrounding medium in the form of heat or motion. The flight of the arrow and the ticking of the watch also give out their share of the energy to the air as vibrations.

Take the case of mechanical power as produced by heat. Heat is transformed into mechanical force, and the amount of work done by the steam-engine is equivalent to the amount of heat generated, minus the loss of heat by escape or friction. As the engine works, the heat disappears, and has to be renewed by fresh fuel. "And since the quantity of energy lost or gained is proportional to the quantity of heat gained or lost, we conclude that heat is a form of energy."<sup>1</sup> But, say you, if heat is energy, where does the heat come from? and where does the energy in my body come from? Have we not here sources whence originates power? Certainly not. The whole of the work done by me, or by the steam-engine, was in abeyance as potential force in the food or fuel which fed us both. And where did the food and fuel get it from? From the sun. How the sun came by its heat or energy, and how that heat and energy found its way into the food and fuel, remains to be told.

Newton's discovery of universal gravitation, or possibly the atomic theory of Demokritos, suggested to Kant, and afterwards to Laplace, the idea that our planetary system was formed by this same attractive force acting upon matter originally nebulous, several million cubic miles of which would go to a single grain. The condensation of this matter thus impelled by attraction would result in rotatory motion, and the centrifugal force about the equator of the general mass would fling off minor masses, such as our planets, and their satellites. But the moving force or *vis*

<sup>1</sup> J. Clerk Maxwell.

*viva*, as it is called, of all this matter, rushing together from different parts of space, would, when arrested, be converted into heat, just as the motion lost by the friction of a wheel or the blow of a hammer on an anvil is converted into heat. And thus it is that we account for the heat in the sun. As to the degree or quantity of that heat, some faint conception may be gathered from Helmholtz's calculation, that if our earth were brought to a stand-still by a sudden shock, it would immediately be fused and reduced to vapour; and if, after having been thus brought to rest, it should fall into the sun—which, of course, would be the case—the quantity of heat developed by the shock would be four hundred times greater.

Next for food and fuel. Plants mainly consist of carbon and hydrogen. They get the first from carbonic acid, the latter from water. But it is only by the rays of the sun that the strong chemical affinity of the oxygen for both the carbon and the hydrogen is overcome, the carbonic acid and water decomposed, and the sustenance of the plant set free. "These chemically active rays of the sun disappear completely as soon as they encounter the green portions of the plants, and hence it is that in Daguerreotype images the green leaves of plants appear uniformly black."<sup>1</sup> They disappear as *vis viva*, but only to be stored up as combustible substances in the plant, and in the coal which was plant. When the animal and the steam-engine use these as food and fuel, the locked-up energy is liberated, and once again becomes a moving force. Thus you see, it comes to pass that the Lagado professor's design is actually realised; only, we ourselves are the instruments for extracting sunbeams from cucumbers, or from mutton which has already extracted them from grass. So, too, all the power obtained by falling water is due to the sun's heat which raised the aqueous vapour; and, in like manner, if we had time, we might trace all the energy in our solar system to the same central source.

<sup>1</sup> Helmholtz.

The result yielded is this: the quantity of force in the universe being a fixed quantity, susceptible of neither increase nor diminution, its expenditure under any one form necessitates the storage or reappearance of an exactly equivalent amount in some other form; and each manifestation of force can be interpreted only as the effect of some antecedent force, no matter whether it be an inorganic action, an animal movement, a *thought or a feeling*.

Accepting this mechanical explanation of thought and feeling for what it is worth, one is still inclined to say with John Mill, "All that explication does in the last resort is to refer us back to a prior inexplicable." No one has more eloquently proclaimed this great truth than Mr. Spencer himself. But when a clever writer like Physicus assures us there is no mystery to explain, the axioms of materialism being granted; that once get down to ultimate truths, and mystery is at an end, because it is irrational to ask for explanation of an ultimate fact;<sup>1</sup> we cannot be expected to accept so bold a proposition without pausing to weigh its contents. It certainly may be irrational to ask for that which we cannot get; but it by no means follows that what we cannot get does not exist. Besides which, just consider what a prodigious number of facts we are called upon to take as *ultimate*. If any of these turn out not to be ultimate, even the position assumed by Physicus will not forbid us to seek the explanation of such; and so far as atheistic deductions depend on their finality, his and all similar arguments are proportionally weak.

Though perhaps not worth mentioning, yet, as a matter of fact, the doctrine of the persistence of force is itself an assumption which it is impossible to verify. The utmost that can be advanced in proof of its credibility is, that in no instance has it been found to be untrue; while the pre-

<sup>1</sup> "The mystery being ultimate, to ask for an explanation of that which, being ultimate, requires no explanation, is irrational."—*A Candid Examination of Theism*, p. 195.

sumption in its favour is strengthened by every test it is put to. I need not say no educated person would dream of calling it in question; but I may say that its validity is purely phenomenal. It is true because it seems to be true, and is doubtless as completely true *for us* as anything can be *in relation to our senses*. Whether our senses have any authority either to explain or dispose of the mysteries of the universe beyond their own little world of phenomena, will be duly examined elsewhere; and in my next letter, I shall also have more to say about matter and force.

Touching the nebular hypothesis, as the basis of the evolution theory, surely the materialist makes his start here from a fact, if fact it be (and it is avowedly only an hypothesis), which is far from ultimate, even by the showing of that theory itself. Whence the nebulous state of matter? I do not ask whence the matter, because this the materialist holds to be as eternal as force. But how came it to be thus diffused? The question is perfectly legitimate, because it is quite clear the matter could not have been eternally in that state. If this be not self-evident, it is easy to prove it from the most prominent of the first principles of evolution, viz., that "the condition of homogeneity is a condition of unstable equilibrium." For, "the several parts of any homogeneous aggregation are necessarily exposed to different forces—forces that differ either in kind or amount; and being exposed to different forces, they are of necessity differently modified. The relations of outside and inside, and of comparative nearness to neighbouring sources of influence, imply the reception of influences that are unlike in quantity or quality, or both, and it follows that unlike changes will be produced in the parts thus dissimilarly acted upon."<sup>1</sup> Matter, therefore, primordially uniform, the starting-point of the atheist, must, if force be eternal, sooner or later have ceased to be uniform; according to the evolutionist, it did cease to be so; indefinite, incohe-

<sup>1</sup> *First Principles*, chap. xiii.

rent homogeneity became definite, coherent, heterogeneity. The nebulous condition came to an end, and our planetary system was evolved. Now, it is certain that *whatever has an end must have a beginning*, for its end signifies that its duration is finite; and what is finite could not have existed during an infinite past. The nebulous state therefore is not an ultimate fact. Will the atheist suggest that the dispersion was brought about by arrested motion and a tumbling together of former worlds? Well, perhaps Encke's comet may have upset Laplace's proof of the permanence of our solar system; and the probability of our falling into the sun may be sufficient to warrant such a suggestion. But this only gets rid of one difficulty by a greater. It is to suppose that the clock may wind itself up by running down; a supposition directly opposed to the maxim that "the capacity of forces for work is exhausted in the degree in which they actually perform work."

Again, evolution lands us in another difficulty, or rather adds to the complication of an old one. Evolution essentially consists in the establishment of complex relations out of simple ones. But given infinite past time, we must arrive at the simplest, the absolutely primordial condition of evolution. Whence this condition, and what initiated the series of consequents? It could not be a natural cause; this would bring it within the category of its consequents; and as one, though the first, of the series, it would itself require an antecedent. This is the old metaphysical puzzle, and one which there is no way out of. But Realism is bound to ignore metaphysical puzzles, for it undertakes to explain evolution from the very beginning of all things. If it should confess its inability to do this, what right would it have to prate about atheism? If, on the other hand, it persists in ignoring the difficulty, we have the elephant, Evolution, upon an unsupported tortoise.

It is quite competent to the evolutionist to take his departure from any position he pleases, and work on-

wards in accordance with scientific principles and known facts. But if the point he starts from is at the extreme verge of the known, he is not justified in working backwards from this point, and applying empirical laws to that which, being on the unknowable side of ultimate facts, confessedly transcends the sphere of science. As a rule, scientific materialists claim infallibility for their arguments, on the score that, unlike the belief of the theist, these rest on demonstrative proof, and are guilty of no question-begging. The motto on their standard is "Scientific methods." By this they stand or fall. Every problem, transcendental or other, is to be solved scientifically: that is, in accordance with the teaching of Realism—or not at all. Thus Physicus finds it impossible "to resist the conclusion that, looking to this undoubted pre-eminence of the scientific methods," the question "whether or not there is a God" is purely "a problem for methodical analysis to solve." I submit that it is a flagrant violation of scientific methods to convert the unknowable into data for conclusions which must therefore be completely beyond the reach of verification; the possibility of verification being the one condition which distinguishes scientific hypothesis from the wildest chimera. Is the working backwards from the nebular hypothesis, or from any really ultimate fact—which this is not—is the starting from gravitation into the realms of the unknowable, and asserting that because gravitation is inexplicable therefore there is nothing beyond it—is this, I ask, to be called reasoning, or is it not rather mere senseless babble? Yet this is the proceeding of the atheist.<sup>1</sup> "How then, it will be asked, did the vast nexus of natural laws which is now observable ever *begin* or continue to be? In this way. When the first womb of

<sup>1</sup> I wish it to be understood, that in criticising atheistic doctrines, or any other, I in no wise impugn their advocates. In my judgment, any one who has taken the pains to

work out his own creed is entitled to deference and respect. Only, if he publish his opinions, he thereby subjects them to criticism.

things was pregnant with all the future, there would probably have been existent, at any rate, not more than one of the formulæ which we now call natural laws. This one, of course, would have been the law of gravitation. Here we take our stand."<sup>1</sup> But even supposing the atheist to take his stand at the *terminus* of Nature's laws, is it a matter of course that he has found it in gravitation? Is not this reduction of all natural laws to one, more specious than sound? The chaotic mass must not only have contained the entire present store of force, but all the different kinds of force or matter in our system:—to deal with this alone. "The mechanical forces must have been also present ready to act; but as these forces can only come into operation by the most intimate contact of the different masses, condensation must have taken place before the chemical forces began."<sup>2</sup> Thought and feeling must have been potentially contained in the chaotic mass. And what is meant by chemical forces being present which could not act, is not easy to conceive. Furthermore, repulsion is quite as much an ultimate fact as, though less conspicuous than, gravitation; and both are complicated with other ultimate facts which are altogether incompatible with the above proposed simplicity. "All physical students," says Professor Newman, "will now agree that gravitation or attraction exists at vast distances and at small distances; but marvellously changes into repulsion at a *very* near distance, and, more marvellously still, changes again into a most intense attraction, which we call cohesion, at an *extremely* small distance."<sup>3</sup>

The atheist always seems to think, when he has brought his explanations to a dead-lock, when he has brought all his facts down to an ultimate fact, that his case is satisfactorily proved. An ultimate fact is his Q.E.D.

<sup>1</sup> Physicus, *ubi supra*.

<sup>2</sup> Helmholtz, *On the Interaction of Natural Forces*.

<sup>3</sup> *Contemporary Review*, October 1878.

The proposition he undertook to demonstrate, viz., the non-existence of God, no more admits of dispute than a sum in arithmetic. But even if gravitation were an ultimate fact, this cannot be converted into an efficient cause; nor does it in the least abolish the need for an efficient cause. On the contrary, it seems to me to add still more to the perplexity of the final mystery of things. For the ultimate of ultimates, be it never forgotten, carries with it not only the persistence of force, but the correlation of the evolved forces. If the atheist assures me that the order, beauty, and harmony pervading Nature, which this correlation involves, is an *a priori* necessity, because the interaction of forces, however blind, must tend to equilibrate themselves, and that equilibrium *is* order and beauty, &c.; if he assures me "that the self-generation of natural laws is a necessary corollary from the persistence of matter and force;" I reply, this necessity of thought (if it be one) may result entirely from limited experience or from the laws of mental association. But even then it is only the facts that we are familiar with. Of their cause, of their necessity, we know and can know nothing. In the next place, I ask the atheist how he reconciles this notion—that the existing laws of Nature and the cosmical harmony which proceeds from them, are products of persisting forces—with his own interpretation of the universe? The most systematic of evolutionists, Mr. Spencer, has conclusively shown that the interaction of these forces must result in universal equilibration. But final equilibration, with Mr. Spencer, means absolute stagnation. And given infinite past time, that which tends to an end must have ended;—unless always the assumption be made that the universe is infinite. This it may or may not be. At any rate, the assumption, inasmuch as it leaves the field of possible knowledge, has as little to do with science as with the belief in God.

To argue that the indestructibility of motion necessitates a redistribution of matter; that what is lost in the

motion of the masses is gained in molecular motion, and that the result is rhythm in the totality of changes, alternate eras of evolution and dissolution—is, as I before said, to suppose that force can generate itself by its own expenditure. It is altogether an inadmissible hypothesis. It is alike unwarranted by experience and untranslatable into thought.

Finally, the statement of that which is inexplicable is not an explanation; nor does it dispense with explanation. Ultimate facts cannot be transformed into a *Deus ex machina*. All that they amount to—all that we can legitimately conclude from them, is—*Given what is given, and we have what we have.*

## LETTER VII.

IN considering the scientific aspect of matter and force, we have noticed some of the objections drawn from science itself to founding a theory of the universe thereon. Before returning to Herbert, I ought to mention one or two metaphysical difficulties connected with the subject which also have an important bearing on this theory.

The persistence of force and the indestructibility of matter are at once the lever and the fulcrum of the evolutionist; and Evolution is supposed by many to have superseded religious belief henceforth and for evermore. Further, the realistic view of matter is that which is necessarily adopted by the evolutionist,<sup>1</sup> and is that on which the atheistic interpretation of evolution entirely depends. "Evolution, considered as a rearrangement of parts, could not be scientifically explained if, during its course, any of the parts might arise out of nothing or might lapse into nothing. . . . Clearly, therefore, the indestructibility of matter is an indispensable axiom."<sup>2</sup> You remember Locke's reference to the subject. It did not escape him that belief in creation might be set aside by supposing matter to be "coeternal with the Eternal Mind. It naturally occurs to us that since it could not be made out of nothing it must be so." There was no getting over that difficulty—no getting over it for a realist, that is to say; consequently atheism has always flourished it successfully in the face of the deist. Mr. Spencer, whose

<sup>1</sup> "Should the idealist be right," says Mr. Spencer, "the doctrine of evolution is a dream."

<sup>2</sup> *First Principles*, chap. vi.

Realism carries him so far as to talk of the "insanities of Idealism," would have us believe that the indestructibility of matter is actually a law of thought. "Our inability to conceive matter becoming non-existent is immediately consequent on the very nature of thought. Thought consists in the establishment of relations. There can be no relation established, and therefore no thought framed, when one of the related terms is absent from consciousness. . . . The annihilation of matter is unthinkable for the same reason that the creation of matter is unthinkable."<sup>1</sup> In every discussion about a first cause, we are met by the argument that, since permanent existences are not effects, the old maxim, Every effect must have a cause, does not apply to the permanent element in Nature.

Force is persistent, matter indestructible. The fact (I speak of the two as one fact) is indisputable. True, experimentally, it is only inferential. Still it is impossible to withstand the testimony of balances and spectroscopes which respond to the millionth, and much less than the millionth, part of a grain. And by such instruments we learn that, let matter undergo what changes it may, whether burnt, evaporated, dissolved or recombined, the quantity of the original mass is never altered: its particles cannot be driven out of space. What is this matter, and what is force? It may surprise you to be told that they are not two different things, but one and the same, thought of in different ways. Let us try to make this clear without getting out of our depth in metaphysics.

We are so accustomed to think of matter as inert, and so accustomed to think of force only in the sense of pushing or pulling, that to speak of the activity or active properties of matter seems incongruous. It is not, however, unusual to talk of the power of a thing to produce such and such effects. Indeed, whatever works a change in us, or in other bodies, may be said to do so, because it

<sup>1</sup> *First Principles.*

has the *power* to do so. When we speak of force or forces, nothing else is meant than this power of matter to operate in various ways. Force is not something with which matter is endowed, as if force were a spirit, and matter a dead body when without it. Science does treat them as distinct entities; but this is a pure fiction, which, though once seriously entertained, is resorted to now merely as a convenient artifice. It suits the purposes of science to deal with matter generally, as of such and such a mass, occupying certain positions in space, and to ignore all its qualities, and therefore its activities. This is the notion of matter proper, *i.e.*, matter in its passive aspect, apart from force. Directly we think of any particular substance, we think of its qualities, for it is only by its qualities that it is known to us as this or that substance. It is simply a contradiction in terms to talk of matter and force as distinct things. The distinction is only logical and verbal. Matter without force would clearly be a nonentity to us, since it is only by its action on us, *i.e.*, by its forces, that we apprehend its existence. As Lewes neatly puts it, "A thing is what it does."

The common notion respecting the qualities of bodies, and hence of force, is that they or it are something *in* the bodies which effect change in us or in other bodies.<sup>1</sup> The common notion of matter is that it is a general name for that which possesses these qualities. But if the qualities of body, both primary and secondary, constitute Matter, and if these qualities are forces, then Force, which is but the general name for these forces or qualities, is identical with Matter. It may be asked, What about Motion? Well, sensible motion is nothing apart from matter moving, and differs from the other qualities of matter in that it is movement of masses or molar movement, instead of

<sup>1</sup> As an instance of the popular, but unphilosophical, notion of force, we may take the following:—"All that we mean by a material force is a force which acts upon matter, and produces in matter its own appropriate effects."—Argyll, *Reign of Law*.

movement of its particles or molecular movement; so that the common notion here described, which is also one form of Dualism or Realism, is untenable; and for it, we ought to substitute the more philosophical notion that, the qualities and forces of matter are identical, and that these again are identical with matter.

Also in another way the indestructibility of Matter and the persistence of Force may be shown to be but different aspects of the same thing. How do we know that matter is indestructible? By finding that, after burning, evaporating, or transforming matter as we will, the accumulated products, whether dust, vapour, or gases, *weigh*, to the millionth of a grain, the same as the original body. But what do we mean by "weigh" the same? We mean (when we are speaking of earthly bodies) that the *force* of the body's pressure towards the earth—its gravitative force—is the same after combustion, &c., as before. The only test we can put it to—the only proof we can have of its permanence—is that, under whatever redistribution, it retains its capability of acting either upon our senses or upon other existences; and the only test of this capability is some measurement of force. Our proof of the permanence of matter resolves itself into this: "The *force* which a given quantity of matter exercises remains always the same."<sup>1</sup>

It is obvious, therefore, that when we speak of the indestructibility of matter, the real truth implied is the indestructibility of *force*. How then do we ascertain that *this* is indestructible? How do we measure force in order to reach this conclusion? All measurement requires some standard unit, and the units of gravitative force are grains, or fractional parts of grains, or whatever we please to call those definite portions of matter which we put into the scales and balance against the given substance before and after its combustion. The proof that no particle of this substance has been destroyed is

<sup>1</sup> *First Principles.*

that the force of its pressure is equal now, as then, to that invariably exercised by the grains or portions of grains. If you ask how we know these units of measurement are themselves constant (and the pertinency of the question is manifest), the only reply is: they exhibit the same amount of pressure, or, in other words, exercise the same amount of *force*; so that the measurement of force by portions of matter is really the measurement of force by force. It thus transpires that force and matter are the same; and the indestructibility of the one and the persistence of the other are but two expressions for a single fact.

Now for the bearing of this conclusion upon Realism and the entire set of materialistic deductions drawn therefrom. Can the most consistent realist resist the Idealism in which his own scientific premises land him? Here is the judgment of science. "All we know about matter relates to the series of phenomena in which energy is transferred from one portion of matter to another, till in some part of the series our bodies are affected, and we become conscious of a sensation."<sup>1</sup> Here, too, we may quote Dr. Huxley: "What we call extension is a consciousness of a relation between two or more affections of the sense of sight or of touch, and it is wholly inconceivable that what we call extension should exist independently of such consciousness as our own." The truths of realism are true for us alone. "Whatever the universe may be, all we can know of it is the picture presented to us by consciousness. This picture . . . may have no more resemblance to its cause than one of Bach's fugues has to the person who is playing it."<sup>2</sup> Our knowledge is absolutely limited to a knowledge of states of consciousness; and it is not possible that a state of consciousness can be like that which is not a state of consciousness. I ask you to reflect on the consequences to evolution of this reduction of matter and force to one and the same thing.

<sup>1</sup> J. Clerk Maxwell, *Matter and Motion*.

<sup>2</sup> *Lay Sermons: Descartes' Discourse*.

First, let us consider Mr. Spencer's argument against creation as based on the inconceivableness of something being created out of nothing. He himself assures us that "matter and motion, as we know them, are differently conditioned manifestations of force." He also coincides so far with the idealist as to admit that matter is a "relative reality." But if matter is nothing but a manifestation of force, a manifestation, moreover, which has but a relative reality, and no more like our notion of it than Bach was like his fugues, nay, a manifestation which it is impossible to conceive as existing "independently of such consciousness as our own," what strength has the argument that, such a particular manifestation as matter cannot be conceived under any *other* form? Yet the creation of something out of nothing positively amounts to no more than this; for we have but to imagine force under some manifestation not conditioned as our senses *condition* it—not conditioned, that is to say, as matter—and the difficulty, or rather impossibility, vanishes; and Mr. Spencer's law of thought, viz., the establishment of relations, breaks down as an objection to our belief in creation. The term supposed to be absent, supposed to be nothing, is not "nothing," after all: it is an unknown form of force. We may, therefore, without any infringement of the necessary conditions of thinking, perfectly well establish a relation between this and the manifestation of it known to us as matter.

It might be objected that I am only shifting the ground of the difficulty; that, by identifying matter and force, creation still amounts to creating force out of nothing. I reply: The doctrine of evolution collapses as an argument against theism, unless the indestructibility of matter means of matter in a realistic sense. Belief in the eternity of force under some manifestation other than that known to us, would not preclude belief in an absolute commencement of the material universe, as we apprehend it. And I say, the creation of such matter as is known to us, need mean no more than the beginning to be of

this particular manifestation ; or, what comes to the same thing, *beginning to be of intelligences which condition this manifestation as ours do.* It follows, too, that the old stock argument of the materialist, that matter is eternal, is impotent if it depend on the duality of force and matter. If, on the other hand, the materialist be a monist and believe in the identity of the two, the argument becomes a mere play on words. He uses the words as synonyms or not, just as it suits his doctrine.

Exception might be taken against constituting force, when unconditioned as matter, a thinkable term. Yet I suppose every one attaches some meaning to the word, just as he does when he speaks of mind. I need hardly observe that modern science holds mind to be as much a property of matter as gravitation ;<sup>1</sup> consequently, if science were always consistent, it would always identify mind with physical force, which, according to the principles I am defending, would be tantamount to identifying mind with matter. We shall see presently that to avoid this *reductio ad absurdum*, from which logically there is no escape, science resorts to innumerable subterfuges, and as often as it does so is outrageously inconsistent.

Where consistency is preserved, so is the absurdity. For instance, Professor Hæckel, who looks upon Dualism as only fit for "a low animal stage of development of the human organism," tells us, "it is above all necessary to recollect that body and mind can in fact never be considered as distinct, but rather that both sides of Nature are inseparably connected and stand in the closest interaction."<sup>2</sup> With him, the prevailing idea is "the unity of Nature." He does not affirm that mind and matter are identical, but he asserts that they are inseparable, and implicitly affirms that mind is a physical or material force. This unity of

<sup>1</sup> Dr. Huxley, who is neither materialist nor atheist, so far as I know, says, "I believe that we shall, sooner or later, arrive at a mechanical equivalent of consciousness, just

as we have arrived at a mechanical equivalent of heat."—*Ubi supra.*

<sup>2</sup> *The History of Creation*, chap. xxiv.

*all* natural phenomena is the grand outcome of Darwinism. "We thus arrive at the extremely important conviction that *all natural bodies* which are known to us are *equally animated*; that the distinction which has been made between animate and inanimate bodies does *not* exist. When a stone is thrown into the air and falls to earth according to definite laws, or when in a solution of salt a crystal is formed, the phenomenon is neither more nor less a mechanical manifestation of life than the growth and flowering of plants, than the propagation of animals or the activity of their senses, than the perception or formation of thought in man."<sup>1</sup> Thus, in order to overcome all the contradictions, confusions, and inconceivabilities attendant upon every attempt like Locke's to explain the connection between mind and matter, Professor Hückel engulfs them all in one still grander inconceivability by supposing all matter to be *equally animated*. His History of Creation and the falling of a stone are *equally* instances of a common law.

The late Professor Clifford, for the sake of consistency, adopted similar opinions. "The only thing," he writes, "that we can come to, if we accept the doctrine of evolution at all, is that, even in the very lowest organisms, even in the amœba which swims about in our own blood, there is something or other inconceivably simple to us, which is of the same nature with our own consciousness, although not of the same complexity,—that is to say (for we cannot stop at organic matter, knowing as we do that it must have arisen by continuous physical processes out of inorganic matter), we are obliged to assume, in order to save continuity in our belief, that along with every motion of matter, whether organic or inorganic, there is some fact which corresponds to the mental fact in ourselves."<sup>2</sup> In some inconceivable sense the stone is conscious of being flung into the air.

Clifford, however, though preserving the continuity of

<sup>1</sup> *Ubi supra*, chap. i.

<sup>2</sup> *Contemporary Review*, Dec. 1874.

his belief, did not avoid inconsistency; for in his essay on "Mind and Body" he writes, "The two things are on two different platforms: the physical facts go along by themselves, and the mental facts go along by themselves. There is a parallelism between them, but there is no interference of one with the other. . . . The mind, then, is to be regarded as a stream of feelings, which run parallel to and simultaneous with a certain part of the action of the body." Then, again, despite this quasi-dualism, which, as will be seen, is not easy to reconcile with the foregoing profession of monism, we have the further announcement that "there is no reason to suppose anything but the universal law of mechanics in order to account for the notion of organic bodies."

Professor Häckel also, as I have just observed, seems occasionally to embrace the duality which he so contemptuously casts aside. It is "interaction," not identity, that he insists upon; and more than once he translates his own views into the words of Goethe, "Matter can never exist and be active without mind, nor can mind without matter."

Mind without matter—force unconditioned as we condition it—seems to be a fixed idea, even with such intellects as Goethe's. But a philosophical abolition of dualism enables us to conceive of force under some other manifestation than matter, even though experience afford us no data for imagining what that may be. So some thinkers suggest that all force may possibly be resolvable into will-force. Schopenhauer, first identifying force with will, converts will into the transcendental "Dinge an sich," thing-in-itself, which underlies all phenomena. The ground idea of his philosophy is bound up with his pessimism. Locke, in his analysis of volition, tells us, "the motive to change is always some uneasiness." This becomes the text of Schopenhauer's metaphysic. All movement, all change, implies effort; all effort implies "some uneasiness." "As all effort is born of want, so

long as it is unsatisfied, the result is pain; and if it is satisfied, the satisfaction being transient, there results a new want and a new pain. To will is essentially to suffer; and since to live is to will, all life is essentially suffering."<sup>1</sup>

Mr. A. R. Wallace thinks "that the whole universe is not merely dependent on, but actually *is* the WILL of higher intelligences, or of one supreme intelligence."<sup>2</sup> This identification of the universe with the infinite world-spirit is as old as Plotinus, and had its echo in Spinoza, Hegel, and Schelling. Perhaps Goethe's pantheism was something akin to it. Indeed, if all force be merged in mind-force or will-force, there is perhaps no alternative save pantheism. Lewes, commenting on this spiritualistic conception of force as one aspect of will, says: "This is in every way objectionable. It creates the fiction of an *efficiens* which is not *materia*—a will apart from all known conditions—and supposes that the material changes we observe are the products of this immaterial *efficiens*; and even then it disregards the speciality of the facts. Unless we mean by cause something wholly unallied to consequent effect, something which is prior to, but not procreant of, the effect, we can no more assign gravity to will than we can assign the death of a man to the flash of the explosion which preceded it."<sup>3</sup> But those who think with Schopenhauer and Mr. Wallace, or even with Robinet and Ueberweg, might say: Our conception is purely transcendental. We do not identify our notion of force with your notion of cause, which latter belongs entirely to the world of phenomena. We believe the Universe and the Supreme Will to be one, and therefore do mean by force something wholly unallied to consequent effect, in your phenomenal sense of effectuation with its phenomenal relations of time.

Mr. Spencer partly escapes the dilemma in a way of his

<sup>1</sup> *Die Welt als Wille.*

<sup>2</sup> *Natural Selection.*

<sup>3</sup> *Problems of Life and Mind*, vol. ii. p. 403.

own. We have noticed that, notwithstanding his aversion from Idealism, no idealist can be more thoroughly convinced of the relativity of knowledge than he; and according to Mr. Spencer, not only our notion of matter, but "all modes of consciousness are derivable from experiences of force." But then, the force *we* know is not the absolute force; it is only a conditioned and relative reality—a correlate of the unconditioned reality, but not the reality itself.

The vast importance of the subject now before us must be the excuse for one more observation of the inseparability of mind from matter. "That one body should act upon another at a distance through a *vacuum*, and without the mediation of anything else by and through which this action and force may be conveyed from one to another, is to me so great an absurdity that I believe no man who has in philosophical matters a competent faculty of thinking can ever fall into it." So writes Newton to Bentley. That a body should act where it is not was to Newton inconceivable. Now, whether we accept the undulatory theory of light, whether we believe that space is empty or occupied by ether, we are equally forced to believe in empty interspaces either between the heavenly bodies or between the atoms of ether. This, I am aware, is disputed by high authorities. Professor Clerk Maxwell says, "Whenever energy is transmitted from one body to another in time, there must be a medium or substance in which the energy exists."<sup>1</sup> Notwithstanding the weight of such an opinion, it appears to me this "must" is no better than the spiritual aid called in by Newton. It is an assumption made to get rid of an inconceivability. But an inconceivability logically as great still remains behind: How is motion conceivable but as taking place in space? Either space must be granted, or else impenetrability must be abandoned; otherwise when a body changed its place it would occupy the space filled by another body, and this at the time. The

<sup>1</sup> *Electricity and Magnetism*, vol. ii. p. 437.

fact is, the materialist (not that Clerk Maxwell was one) is bound to make away with inconceivabilities; for, as Lange affirms, "The whole cause of Materialism is for ever lost by the admission of the inexplicableness of all natural occurrences;" while in another place he writes, "We may turn and twist the notion of matter as we like, we always come upon an ultimate something that is incomprehensible, if not absolutely contradictory,—as in the hypothesis of forces that act at a distance through empty space. There is no hope of ever solving this problem; the hindrance is transcendental."<sup>1</sup> If this be so, how are we to think of it but as *force where matter is not?* or, we may say, as force not under the manifestation of matter? And if we so think of it, in what does the idea differ from the thought of mind apart from matter?

For those who find themselves able to indulge in the hope of immortality, one inconceivability is here disarmed.

<sup>1</sup> *History of Materialism* (trans.), vol. ii. p. 309.

## LETTER VIII.

My last two letters will facilitate our digest of Herbert's exposition of Realism. We left him summing up the scientific conception of the material universe, and I deemed it advisable to supplement his summary by a more elaborate inquiry into present conceptions of Force and Matter. Herbert's first aim was to test Realism by its various theories respecting the union of mind and body. He shows, easily enough, that each and all of these theories are inconceivable. This result would in itself be fruitless, since every realist (with the exception of those who fancy there is nothing to explain) already admits the inconceivability of the union. Herbert, however, turns this inconceivability into a refutation of Realism, by proving that every one of its theories is inconsistent with its own principles; and that, sphinx-like, the formidable problem devours the doctrine which vainly tries to solve it.

The radical creed of science is, and must be, that *all* phenomena are physical phenomena; that all are, or will be, reducible to questions of mechanics and molecular physics. Inorganic action, thought, or feeling, all alike are manifestations of a force, the mechanical equivalents of which will sooner or later be discovered. In this unity of Nature there is no flaw, no solution of continuity. The serpent's tail is in his mouth. Like the scales on his body, events overlap one another. Every change is both effect and cause. On every one Nature sets her stamp; and on the stamp is PUSH AND PULL.

The materialistic theories are so interlaced, each blend-

ing so imperceptibly with the others, that the only way of disentangling them is by reference to the teaching of their representative advocates. Yet even these are far too numerous for any work not a history of materialism. I can only allude here to the opinions of a few of our popular instructors. The most prominent conceptions we have hitherto noticed are—(1) That thought is a mode of motion ; (2) that mind is a function of specially organised matter ; (3) that mind, though distinct from matter, is inseparable from it ; (4) that all matter is animated. But even when thus set down, the distinction is virtually little more than verbal ; for though there seems to be a wide difference between the second and fourth of these theories, and though it does not follow from the third—mind is inseparable from matter, that the fourth—matter is inseparable from mind, should be true, yet all are implicitly united by the first, which is the root-idea common to the lot. The notion that all matter is animated, (assuming thought to be a mode of motion), is the most consistent of any ; since the restriction of mind to specially organised matter is not only burdened with the metaphysical difficulties already advanced, but is met by the objection that feeling and thought have to be introduced at some particular stage of the material change. Where it is explicitly avowed that correlation exists between mechanical movement and consciousness, there is no logical objection to this introduction of what would merely be a new mode of motion. But the physicists who distinctly assert this, and *consistently* adhere to it, are very exceptional. Most of the scientific materialists, when they leave the proper sphere of science to speculate in metaphysic, become Realists ; in the philosophical sense of the term, they become Dualists, or at least they abstain from treating consciousness as a mode of motion ; *i.e.*, they do not treat it as a change in *all respects* like other changes. They do not then continue to say, Thought is *nothing but* transmuted motion, as as they would say, Heat, or light, or magnetism is nothing

but transmuted motion. For the most part, they treat mental phenomena as a class by itself; as "the single product of energy which is not motion." Whenever this is done, we get assumptions which are purely transcendental in character; and which, moreover, necessarily abrogate the scientific conception of force and molecular physics;—a conception, be it remembered, which every scientist is wedded to, and pledged to stick to for better or for worse.

It is this treatment of thought and feeling which Herbert so successfully attacks with weapons borrowed from the armoury of science itself. He deals first with the inconsistency here spoken of. He quotes Dr. Tyndall (not for the purpose of refuting him, but) to the effect that "a definite thought and a definite molecular action occur simultaneously," but we do not know why; and that "The passage from the physics of the brain to the corresponding facts of consciousness is unthinkable. . . . Were our minds and senses so expanded, strengthened, and illuminated as to enable us to see and feel the very molecules of the brain, . . . and were we intimately acquainted with the corresponding states of thought and feeling, we should be as far as ever from the solution of the problem. . . . The chasm between the two classes of phenomena would still remain intellectually impassable."<sup>1</sup>

Dr. Huxley is cited to the effect that, he entirely agrees with the sense of the latter passage. And in the same critique, when drawing the distinction between the physical basis of consciousness and consciousness itself, and speaking of the two sets of changes, he confirms this concurrence by saying, "One set of which may, and doubtless will, in course of time, be followed through all their complexities by the anatomist and the physicist, and one of which only the man himself can have immediate knowledge. As it is very necessary to keep up a clear distinction between these two processes, let one be called *neurosis*

<sup>1</sup> *Scientific Materialism.*

and the other *psychosis*.”<sup>1</sup> But while confessing his ignorance to be hopelessly incurable of what happens in the passage from one to the other, Dr. Huxley does so simply because it is an ultimate fact; and cites as an exactly parallel instance of incomprehensibility the equally ultimate fact that a ball in motion communicates some of its motion to a ball at rest. Indeed, the identification is clinched by the following: “All that I have to say is, that, in my belief consciousness and molecular action are capable of being expressed by one another, just as heat and mechanical action are capable of being expressed in terms of one another.”

In a later essay, having laid it down as an established fact that states of consciousness are caused by molecular changes in the brain, Dr. Huxley writes, “Is there any evidence that these states of consciousness may, conversely, cause those molecular changes which give rise to muscular motion? I see no such evidence. . . . It seems to me that, in men, as in brutes, there is no proof that any state of consciousness is the cause of change in the motion of the matter of the organism.”<sup>2</sup>

Dr. Carpenter, speaking of the transition from the *physical* to the *psychical* change, says: “That the doctrine of the conservation of energy holds good in the animal body as completely as it does in the universe around, I should be among the last to dispute; that in the most powerful muscular effort which can be called forth by the human will there is no more creation of force than in an automatic convulsion, I believe as firmly as Professor Clifford; but just as a rider utilises and directs the motor energy of his horse, so I maintain does the mind of man use and direct (within certain limits) the physical energy of his body, turning this to account not only in muscular movement, but also in those cerebral changes which serve as the bases of further mental operations.”<sup>3</sup> Here

<sup>1</sup> *Mr. Darwin's Critics*.    <sup>2</sup> *On the Hypothesis that Animals are Automata*.

<sup>3</sup> *Mental Physiology*, p. 27.

Dr. Carpenter identifies mind force with physical force, mental changes with material changes; but he differs from Dr. Huxley in that he regards the will as a "new and independent power, . . . an entity wherein man's nobility essentially consists, which does not depend for its existence on any play of physical or vital forces, but which makes these forces subservient to its determinations."<sup>1</sup> Thus, while Dr. Carpenter saves his adherence to the received doctrine of energy, he lapses into Dualism by recognition of the distinct character of volition. And whereas Dr. Huxley holds that mechanical movements of the brain substance and of the other parts of the nervous system are the causes, but not in turn the effects, of thought, Dr. Carpenter contends, "that the connection between mind and body is such that the actions of each have a definite causal relation to those of the other." He also observes, "If *neurosis* can give rise to *psychosis*, it is surely quite accordant with the great fundamental principle of interaction to affirm that conversely *psychosis* can give rise to *neurosis*, first as the electricity generated in a volcanic battery by chemical change can itself produce chemical change."

Professor Bain's theory is that, "there is in company with all our mental processes *an unbroken material succession.*" "From the ingress of a sensation to the outgoing responses in action, the mental succession is not for an instant dissevered from a physical succession. . . . Parallel to this mental series is the physical series of facts, the successive agitation of the physical organs. . . . It would be incompatible with everything we know of the cerebral action to suppose that the physical chain ends abruptly in a physical void occupied by an immaterial substance, which immaterial substance, after working alone, imparts its results to the other edge of the physical break, and determines the active response—the shores of the material with an intervening ocean of the immaterial.

<sup>1</sup> *Mental Physiology.*

There is, in fact, no rupture of nervous continuity. The only tenable supposition is that mental and physical proceed together as undivided twins. When, therefore, we speak of a mental cause, a mental agency, we have always a *two-sided cause*; the effect produced is not the effect of mind alone, but of mind in company with body."<sup>1</sup>

Mr. Spencer's doctrine has an illusive resemblance to that of Mr. Bain, at least so far as regards this *two-sided cause*. His view is that feeling and nervous action are the "inner and outer faces of the same change."<sup>2</sup> They are subjective and objective aspects of "the same ultimate reality." But this ultimate reality being unknowable, the relative realities—body and mind—are regarded by us as distinct. Speaking of "the two modes of being which we distinguish as subject and object," he says this distinction "is itself the consciousness of a difference transcending all other differences." "Can we then think of the subjective and objective activities as the same? Can the oscillation of a molecule be represented in consciousness side by side with a nervous shock, and the two be recognised as one? No effort enables us to assimilate them. That a unit of feeling has nothing in common with a unit of motion becomes more than ever manifest when we bring the two into juxtaposition."<sup>3</sup> And again, "We continue utterly incapable of uniting the two so as to conceive that reality of which they are the opposite faces."<sup>4</sup>

As before seen, Mr. Spencer affirms that, thought and feeling can only be interpreted as manifestations of force; and if matter and motion are also "differently conditioned manifestations of force," then, as already observed, mind must be identified with matter. But how is this identification to be reconciled with the Realism so dogmatically professed by Mr. Spencer? I presume Mr. Spencer would reply that, the Dualism just now instanced

<sup>1</sup> *Mind and Body*.

<sup>3</sup> *Ibid.*, § 62.

<sup>2</sup> *Principles of Psychology*, vol. i. § 51.

<sup>4</sup> *Ibid.*, § 625.

is, as it were, only provisionally adopted, and that the unity implied in the identification of mind and material force refers to their union in the unknowable ultimate reality. But then again, it naturally occurs to one to ask, If "the two modes of being" are *erroneously* regarded as two, or only so regarded under mental reservation, what becomes of Realism? And how are we to deal with the assertion "that the current belief in objects as external independent entities has a higher guarantee than any other belief whatever; that our cognition of existence, considered as noumenal, has a certainty which no cognition of existence considered as phenomenal, can ever approach?" At any rate, after so clear an utterance as this, it is no longer open to Mr. Spencer to claim accordance between his Dualism and his other theory,—that consciousness and movement (nervous actions) are the inner and outer faces of the *same* change,—on the plea that only relative and phenomenal validity is demanded for his Dualism. Our cognition of an external world, and therefore of an internal world—of outer and inner—is here asserted to be *noumenal*. Inner and outer, according to the last passage quoted, are not two faces of "the same ultimate reality," they are two ultimate realities whose noumenal existence is guaranteed by an act of consciousness.

The conclusion arrived at is: If Dualism or Realism has an absolute and noumenal validity, the doctrine that mind is a mode of motion, or, like matter, a manifestation of physical force, has only a relative and phenomenal validity; conversely, if mind and matter are noumenally one, Realism is only relatively true.

In the last letter we noticed the attempts made by Clifford and Professor Häckel to escape the problem of mind and matter by resorting to Monism. Having set these various theories in array, we may pass to the critical examination which they meet with at the hands of Herbert.

## LETTER IX.

THE ordinary materialist assumes that external phenomena are what they seem. With him matter, as we know it, is *the* ultimate reality. He may, perhaps, regard this matter as a manifestation of force; if so, it is the force we know, which then becomes his ultimate reality; and it is this force, known to us either as matter or as motion, that he identifies with mind. The materialist may carry his conviction of the relativity of knowledge beyond the identification of force with matter, motion, and mind. He may, like Mr. Spencer, regard this force as itself a *relative* reality, though in some way we have cognition of its noumenal existence; or he may even profess Idealism as sincerely as Dr. Huxley does, and still, in order to preserve inviolable the great law of unbroken sequence in material changes, he may maintain that, "consciousness is a function of nervous matter when that nervous matter has attained a certain degree of organisation."

Whether he side with Realism or Idealism, the scientific materialist who undertakes "to account for the emergence of feelings among the mechanical processes of the nervous organism," is bound to maintain an unbroken chain of physical continuity; and whatever private metaphysical opinions Science may have of its own, its business is to deal with phenomena, not as if they were *appearances* to us of underlying realities, but as the realities themselves.

It is just because Science has *private* opinions of its own, just because of its convictions of the relativity of knowledge, just because of the irresistible arguments of

Idealism, that it gets into a muddle. It has officially to profess Realism, and covertly to recognise Idealism. It then sets about solving the problem of their reconciliation by stating it in terms which are applicable to the first only. It reduces a question of metaphysics to a question of mechanics; thinks it possible we may get "to express consciousness in foot pounds;" and naturally and *scientifically* lands itself in the conclusion that this and all other of its deductions are made by machinery.

It was Descartes' theory that brutes are automata. It is the theory of Dr. Huxley that men are no less so. Malebranche grappled with the difficulty in another way. He called in recurring miracle to his aid. God produces the sensations which correspond to external objects, and the movements in the objects which correspond to our volitions. Leibnitz, objecting to these "occasional causes," hit upon the ingenious hypothesis of "Pre-established Harmony." God has so adjusted body and mind that they resemble two unconnected clocks, so constructed that the instant one strikes the hour, the other strikes it; a continuous instead of an occasional miracle. The struggles of great minds with the mysteries of existence must always be suggestive and deeply impressive. The pioneers of truth will always command our veneration. But let not our respect blind us to the fact that the struggle must end, like the wrestlings of Jacob, in the victory of the Unknowable.

Herbert sums up the leading theories here referred to under three main divisions. One "consists of suppositions that acts of mind are distinct from nerve changes, yet in some way products of them." Thus Dr. Carpenter contends that mind and physical processes act and react on each other. Dr. Huxley holds that consciousness is a function of specially organised matter, but thinks it is very necessary to keep up a clear distinction between them.

Another class preserves physical continuity "by repre-

sending the alliance between mental and physical processes as so intimate that they are not successive and distinct, but strictly concomitant and inseparable acts, so that each series proceeds without breaking in upon the other; and some say that they form in reality but one series with two sides." Clifford, Professor Bain, and Mr. Spencer are more or less in favour of such views.

"To this third class belongs the extreme supposition which converts the inseparable concomitance and underlying unity of the physical and mental processes into absolute identity."

Herbert criticises the tenets of each of these eminent thinkers in turn. My space limits me to the general principles of the respective classes. Indeed, both first and second divisions may well be thrown into one; for the difference between them is more apparent than real. The point of Herbert's criticism is this: If thought be a distinct operation of physical energy, or if it be a product of organisation, and not at the same time a mode of motion, there must be a rupture of physical continuity, and such rupture directly contravenes the best-established inductions of modern science.

To take first the hypothesis that thought is a product of energy, but not itself a material change. "Consider the situation when a thought occurs; . . . the energy which produces thought cannot be producing material changes at the same time;"<sup>1</sup> because, you understand, the amount of energy being fixed, it could only produce an equivalent effect. It could not, on any particular occasion, produce the appropriate set of movements *and* the thought (which we are now supposing not to be a movement) into the bargain. "Therefore, during the act of thought there must be a certain amount of energy withdrawn to perform it, leaving so much less for that period to effect material changes."<sup>2</sup> Could we see and feel the very molecules of the brain, we should discern what geologists call a *fault*

<sup>1</sup> *Herbert*, p. 28.

<sup>2</sup> *Ibid.*

in the series of physical sequents. Part of the material consequents would be missing, for the energy which should have produced the complementary part would be engaged in generating thought.

Further, according to the doctrine of persistence of force, the missing energy would again assert itself when the mental state had passed away; "and . . . those enfeebled material consequents would be followed by consequents in excess as to number or vigour as soon as the energy withdrawn had been restored." In this case, therefore, we should have that break which from the scientific point of view is fatal to the theory.

Every one of the foregoing doctrines, except that which assimilates thought and movement, is more or less liable to these objections. Let a few of them be tried. Will the notion that volition is an independent power bear to be confronted with the scientific conception of force? "This new and independent power is then a separate fund of energy, expending itself in the physical universe and influencing the operations there. Therefore it has physical effects, but it has not physical causes. It keeps pouring energy into the physical universe, but from what source does it recoup itself?"<sup>1</sup>

Will the notion that consciousness bears the same relation to molecular changes as heat bears to mechanical action stand the test? Certainly not, unless motion and consciousness be one. Certainly not if the chasm between the two classes of phenomena is intellectually impassable. Certainly not if we have to keep up a clear distinction between the two processes; for "on this view thoughts are separate links in the chain of physical sequences, and involve, as we have seen, impossible ruptures of physical continuity whenever they occur."<sup>2</sup> We should have physical causes not immediately producing physical effects, but transmitting their energy through a meta-physical medium. We should have a given material force

<sup>1</sup> *Herbert*, p. 33.

<sup>2</sup> *Ibid.*, p. 39.

in action, part of which would be temporarily suspended in thought, and which, when the thought expired, would act with accumulated impulse, like an hydraulic ram.

There is another objection to Dr. Huxley's statement that, as electric force and light-waves are expressions of molecular changes, "so consciousness is, in the same sense, an expression of the molecular changes which take place in that nervous matter which is the organ of consciousness."<sup>1</sup> "If," says Herbert, "we follow the course of the physical chains at the point where a thought occurs, we shall by the law of energy find the entire amount of force operating in the antecedents of the thought pass into its physical consequents exactly as if no 'result' of thought had arisen."<sup>2</sup> The physical series will, as it were, have ignored the existence of the thought altogether. But if heat, or chemical change, or light-waves, or electric force were evolved, the expression would not be the same in any sense. Any of these changes would engage their exact equivalent of the force antecedently in operation, and reduce it to that extent.

Can thought be treated in any way as a distinct product of organisation without involving a rupture of physical continuity? Dr. Huxley has attempted the task by converting brutes and men into automata. "The consciousness of brutes would appear to be related to the mechanism of their bodies simply as a collateral product of its working, and to be as completely without any power of modifying that working as the steam-whistle which accompanies the work of a locomotive engine."<sup>3</sup> As Herbert says, "These statements amount to the preposterous assertion that states of consciousness are regular effects of physical antecedents, but do not become causes in their turn." "There are, on the one hand, many grounds for believing that nerve-changes are the causes of states of consciousness; but if so, assuredly states of con-

<sup>1</sup> *Mr. Darwin's Critics.*

<sup>2</sup> *Ibid.*, p. 41.

<sup>3</sup> *The Hypothesis that Animals are Automata, Fortnightly Review, Nov. 1874.*

consciousness become in their turn the immediate antecedents or causes of nerve-changes. On the other hand, it violates every analogy to suppose that thoughts give rise to movements; [for then there would be an interregnum or suspension of energy]; but if they do not, then neither can thoughts be the effects of movements nor the products of physical energy."<sup>1</sup> Either alternative is self-contradictory, or at least incompatible with the law of force.

Can the objection be overcome by supposing mental acts to be *concomitants* instead of *consequents* of nerve changes, as might be suggested by Dr. Huxley's "collateral product?" That depends on the meaning of "concomitant." If it mean that the collateral product is a co-effect of physical causes, then it becomes a consequent, and is open to the objection just now stated. If it mean mere parallelism, like a horse outside the shafts attached to the horse inside them but not fastened to the carriage, — if it mean "the two things are on utterly different platforms, the physical facts go along by themselves and the mental facts go along by themselves," — then, no doubt, such an hypothesis does not violate the law of energy. But this notion is as purely metaphysical as the crudest conception of spiritualism; it is to all intents and purposes the pre-established harmony of Leibnitz; moreover, a "*distinct* fund of energy must be required to accomplish the mental work."

Of course it would never do "to suppose isolated acts of consciousness arising now and again, parallel with nerve changes which contribute nothing to produce them." This would demand creations of something out of nothing. It was to avoid this, Clifford had recourse to the theory "that along with every motion of matter, whether organic or inorganic, there is some fact which corresponds to the mental fact in ourselves." But if the inseparability of mind and brain is proved by injury to the spinal cord, the same argument may be used against further extension

<sup>1</sup> *Herbert*, p. 49.

of mind. "It must indeed be admitted," says Dr. Huxley, "that if any one think fit to maintain that the spinal cord below the injury is conscious, but that it is cut off from any means of making its consciousness known to the other consciousness in the brain, there is no means of driving him from his logic. But assuredly there is no way of proving it; and in the matter of consciousness, if in anything, we may hold by the rule, 'De non apparentibus et de non existentibus eadem est ratio.'" <sup>1</sup>

The upshot of the investigation is that science can make nothing whatever of mind. It can find no room for it anywhere in the working of the material machinery. Movements in the brain can never beget anything but movements. They cannot produce something which is not movement; still less can they produce this something *in addition* to their equivalent material changes. To suppose otherwise would annul the law that "the capacity of forces for work is exhausted in the degree in which they actually perform work." Nor can they be divided between their correlate movements and thought, for this would partially break the nervous continuity. Nor can they end abruptly in thought and then pass on to other movements through the medium of a metaphysical link, for this would completely break the nervous continuity.

Mental facts, in a word, cannot be classed amongst phenomena. They are not appearances. We do not see them. We are conscious of their existence in ourselves. But their existence in others is an inference which science has nothing whatever to do with. The only plan open to science is to ignore them altogether. Dr. Huxley makes the nearest approach of any one to the consistency which science requires of him by converting all animals, man included, into automata. This, however, to use one of his own smart sayings, is "burning his ships to get rid of the cockroaches."

It remains only to deal with the hypothesis that

<sup>1</sup> *Fortnightly Review*, Nov. 1874.

thought is a mode of motion. This view "teaches that certain movements of the nervous organism do, while they continue such, and without any additional element, themselves constitute the act we call thought." They abolish all distinction between material and mental facts as illusory. Strange to say, in this conclusion we have a meeting of extremes. This is exactly the result reached by Idealism. Extreme Materialism and extreme Idealism are here at one. But the consequence is diametrically opposite to that which the materialist intends. Science has satisfied us, quite independently of metaphysics, that direct consciousness of an external or material world is impossible. Nothing is known of this external world until the nerve-waves reach the cephalic centres, and even then we are entirely unconscious of any movement or change in these centres, although the movements there are the only ones which are immediately conjoined with sensation. By the showing of science itself, then, the external world is assumed, to account for our perceptions of something different from ourselves. But if the perceptions and the material world are one and the same, the assumption is superfluous. "To retain the distinction between the two, and seek some hypothesis to identify them when the necessity for supposing they are two no longer exists, is to remain burdened with a difficulty which has vanished. And it would be out of the question to effect this union by merging the world presented to us in consciousness in the material world whose existence is only assumed. If one of the two must be renounced, obviously it is the hypothetical material world which must be surrendered; and then the conclusion of the idealist is established."<sup>1</sup> "Matter is annihilated if it be identified with mind."

<sup>1</sup> *Herbert*, p. 94.

## LETTER X.

It is Herbert's object to show that these failures are the inevitable consequences of the realistic method. We are perpetually passing from the actual to the ideal till we overlook the fact that, although the two kinds of experience are as unlike as they can be, they are, nevertheless, both equally experiences of the same individual mind. "We may say generally that in what we call the perception of material changes, outside movements themselves are not before us, but only appearances of movements consisting of feelings. We are presented, then, with but one thing, the mental appearance of a material fact, and erroneously suppose that we are presented with two—the fact as well as the appearance. In other words, the parallel facts of feeling and movement turn out to be the single fact of a feeling appearing like a movement. The superfluous doubleness proves to be imaginary and illusory, a difficulty of our own creation. . . . Whether it be right or wrong to suppose that facts of the external world correspond with these appearances in the brain, one thing is certain, that those external facts do not come before us *as phenomena in addition* to these appearances in the brain, and to count them as if they did is to count them twice over, and to create a double series of processes where we discover only one, and cannot find room for two."<sup>1</sup>

Mephisto's evasion of the pentagram was not more puzzling to Faust than is the presence of Mind to Science, whose Drudenfuss is the law of continuity. This at least is clear to Science: If the law of continuity is inviolable

<sup>1</sup> *Herbert*, p. 99.

(and Realism collapses if it is not), it is impossible that mind can effect any change in the material world. Yet can any man in his senses abandon them for a theory which has no other verification than his senses? Why will science not be content to acknowledge that consciousness is not a physical fact? If it were so, it would leave some physical trace. We should detect it somehow or other, as we detect other changes. But every single one of the physical changes we can detect are, and must be, due to antecedent physical changes. If it were not so, there would be that terrible breakage, which, of course, is not to be dreamed of.

Dr. Huxley is clear and outspoken here, as he always is: "It must be premised that it is wholly impossible absolutely to prove the presence of consciousness in anything but one's own brain."<sup>1</sup> Clifford is equally clear: "I have no means of perceiving your mind. I judge by analogy that it exists." But, as men of science, are they not bound by their own maxim, "De non apparentibus et de non existentibus," &c. ?

Yet, despite Dr. Huxley's gallant attempt to get rid of mind by denying the efficiency of volition, he yet admits we are "*conscious automata*;" forgetting apparently that consciousness is, strictly speaking, as much a stumbling-block to science as is volition. Clifford, "to save continuity in our belief," animates all matter. Still he places physical facts and mental facts "on two different platforms;" making the facts of each set "go along by themselves," and by so doing, like Dr. Huxley, counts them twice over.

We are perfectly justified in the distinction we draw between subject and object, but always with this reservation: "We may treat the phenomena as material objects, or we may regard them strictly as they are presented to us—that is to say, as parts of consciousness; but we cannot do both at the same time, because we are not dealing

<sup>1</sup> *Fortnightly Review*, November 1874.

with two sets of facts, but with the same set of facts regarded in these two different ways, and we take them twice over if we reckon up a mental as well as a material series.”<sup>1</sup> “When we call certain of our conscious states our bodies, we cease to regard them as conscious states, and are not at liberty to blend with them other conscious states still regarded as such. In other words, we proceed on the materialistic hypothesis when we speak of our own bodies, and we must recognise only material facts, and may not, therefore, blend even our own feelings with that material structure which we conceive our body to be.”<sup>2</sup>

Herbert’s doctrine may receive illustration in the following extract from Lewes’ “Problems of Life and Mind:” “That the *passage* of a motion into a sensation is unthinkable, and that by no intelligible process can we follow the transformation, I admit; but I do not admit that there is any such transformation, &c. Viewed from the physical or objective side, it is a neural process; viewed from the psychological or subjective side, it is a sentient process.” Professor Bain’s doctrine of the two-sided fact (although criticised by Herbert) is also, as I gather from his philosophy generally, very similar to Herbert’s own.<sup>3</sup> He certainly is as staunch an idealist as Herbert himself was, and Herbert’s own theory that we are dealing with the same set of facts regarded in different ways is, as I understand the two thinkers, essentially Professor Bain’s.

Mr. Spencer’s doctrine, that mental and physical phenomena are “subjective and objective faces of the same fact,” is altogether different; for Mr. Spencer, in accordance with his Realism, insists upon the noumenal reality of the doubleness; at least he insists on the noumenal reality of that factor in the duality which is not mind; and from this position Materialism glides smoothly into the notion that matter is the *original* and supreme ultimate

<sup>1</sup> *Herbert*, p. 101.

<sup>2</sup> *Ibid.*, p. 109.

<sup>3</sup> See Appendices to *The Senses and the Intellect*, also to *The Emotions and the Will*.

reality, while mind is its contingent product, or one of its many properties or functions, evolved only when matter—the absolute and primary reality—works itself into a suitable condition.

This last is the teaching of Dr. Huxley, notwithstanding his denunciation of Materialism, and, still more strange to say, notwithstanding his Idealism. No compromise is practicable between the theory that, human beings are automata, or the assertion that, the progress of science “now more than ever means the extension of the province of what we call matter and causation, and the concomitant gradual banishment from all regions of human thought of what we call spirit and spontaneity,”—and the Idealism which declares, “It is an indisputable truth that what we call the material world is only known to us under the forms of the ideal world, and as Descartes tells us, our knowledge of the soul is more intimate and certain than our knowledge of the body.”<sup>1</sup> One view completely and radically banishes mind and makes matter supreme; the other reduces matter to a mental state, or at most an inferential existence, and gives the supremacy to mind.

If science be our sole guide, if its conclusions be irrefragable, and reach not merely to things as they *seem*, but to things as they *are*, then assuredly there is no escape from the conviction that consciousness is never the cause of physical changes. All the acts and gestures which we usually suppose to be produced by pleasure or pain (which are mental states) are nothing but varieties of movement; and movement, according to science, must be the product of movement; the succession of material changes must be unbroken now and *ab ante*.

Flourens' famous experiment upon the pigeon, and Pflüger's experiment on the frog, are both quoted by Dr. Maudsley to show that animals are to a *certain* extent automata; and that many of their most complicated actions are reflex products of nerve function, reactions of nerve-centres in a

<sup>1</sup> *Lectures on Descartes, Macmillan's Magazine, May 1870.*

definite way to suitable impressions. Remove from a pigeon's head what corresponds to the organ of consciousness in the human brain—the cerebral hemispheres—and “the pigeon seemingly loses at once all intelligence and all power of spontaneous action. It appears as if it were asleep; yet if thrown into the air it will fly. If laid on its back, it struggles on to its legs again; the pupil of the eye contracts to light, and, if the light be very bright, the eyes are shut. It will dress its feathers if they are ruffled, and will sometimes follow with a movement of its head the movement of a candle before it; and when a pistol is fired off, it will open its eyes, stretch its neck, raise its head, and then fall back into its former attitude.”<sup>1</sup>

You may go even farther with the frog, and make him prove as much with his head off. “Touch with acetic acid the thigh of a decapitated frog over the internal condyle, and the animal rubs it off with the dorsal surface of the foot of the same side; cut off the foot and apply the acid to the same spot, and the animal tries to get at it again with its foot, . . . after some fruitless efforts, therefore, it gives up trying in that way, . . . and at last it makes use of the foot of the other leg.”<sup>2</sup>

Dr. Huxley illustrates like results by a still more interesting and remarkable instance of automatism. A sergeant in the French army was wounded in the head at the battle of Bazeilles, since which event he has been periodically subject to “disturbances of the function of the brain,” “short abnormal states intervening between long normal states.” “He eats, drinks, smokes, walks about, dresses and undresses himself, rises and goes to bed at the accustomed hours. Nevertheless pins may be run into his body or strong electric shocks sent through it without causing the least indication of pain. No odorous substance, pleasant or unpleasant, makes the least impression; he eats and drinks with avidity whatever is offered, and takes asafœtida, or vinegar, or quinine

<sup>1</sup> *Body and Mind*, Lect. 1.

<sup>2</sup> *Ibid.*

as readily as water. No noise affects him ; and light influences him only under certain conditions. Dr. Mesnet remarks that the sense of touch alone seems to persist, and indeed to be more acute and delicate than in the normal state ; and it is by means of the nerves of touch, almost exclusively, that his organism is brought into relation with the external world.”<sup>1</sup>

Notwithstanding this insensibility to all but tactile sensations, “it is possible so to act upon his tactile apparatus as to give rise to those molecular changes in his sensorium which are ordinarily the causes of associated trains of ideas.” His state is thus described by Dr. Mesnet : “He is walking in a thicket in the garden. The cane which he dropped a few minutes before is replaced in his hands. He feels it, passes his hand at repeated intervals over the crooked handle ; becomes attentive, seems to listen, and suddenly calls ‘Henri !’ Then, ‘There they are. There are at least twenty of them ! Come on, comrade ; we’ll manage ’em !’ Then putting his hand behind him, as if for a cartridge, he goes through the movements of loading his musket ; crouches flat in the grass, his head behind a tree in the position of a sharpshooter, and follows with gun to shoulder all the movements of the enemy he believes to be at hand.”

Numbers of curious experiments produce similar consequences. The man begins a letter to his general recommending himself for a medal. A screen is placed between his eyes and hands ; he continues writing. The words become illegible, and he gradually stops without manifesting discontent. Water is substituted for ink ; he leaves off writing, looks at his pen, wipes it, dips it in the water and begins again with the same effect. Being a singer, he is given a roll of blank paper. He puts himself in a becoming attitude, and having finished his song, drinks off a tumbler of vinegar and water without a grimace.

What is the inference which it concerns us to draw

<sup>1</sup> *Fortnightly Review*, Nov. 1874.

from these cases? Clearly that, whether consciousness be present or absent, the series of physical changes go on exactly the same. The frog without a head, and therefore without consciousness, behaves as if he had a head and were conscious. The man even goes through the semblance of *reasoning* with his general about a medal, but writes his arguments in water; does not feel the prick of a pin, or know vinegar from wine.

There is nothing to guide us as to the existence of consciousness. In the case of the man, it is impossible for any one to say "whether the series of actions constituting this singular pantomime was accompanied by the ordinary states of consciousness, the appropriate train of ideas, or not. Did the man dream that he was skirmishing? or was he in the condition of one of Vaucanson's automata—a mechanism worked by molecular changes in his nervous system? The analogy of the frog shows that the latter assumption is perfectly justifiable."

Both Dr. Maudsley and Dr. Huxley agree in their explanation of what happens. When an organism has been sufficiently modified by the repetition of certain acts, it will perform similar acts mechanically. As Dr. Huxley lucidly expresses it: "Every molecular change which gives rise to a state of consciousness leaves a more or less persistent structural modification, through which the same molecular change may be regenerated by other agencies than the cause which first produced it."<sup>1</sup> "A song which has been learnt has its molecular representative, which potentially represents it in the brain, just as a musical box wound up potentially represents overtures. Touch the stop and the overture begins; send a molecular impulse along the proper afferent nerve, and the singer begins his song."

<sup>1</sup> *Fortnightly Review*, Nov. 1874.

## LETTER XI.

CONSCIOUSNESS gives no physical evidence of its existence. Science being conversant with physical changes only, is quite justified, therefore, in ignoring consciousness, but not justified in its attempts to explain that which it is bound to ignore. It is strictly within the province of science to proclaim that certain physical *movements* take place when certain nerve changes traverse certain portions of the brain, and do not take place when those portions are either absent or impaired. But it is not competent to science to affirm that *consciousness* depends on such portions of the brain; for, as Lange says, "if a clock strike the hour falsely because some little wheel is damaged, it by no means follows that it was this wheel which struck the hours."

Even, however, if the brain act in all cases as a whole, as Professor Calderwood thinks,<sup>1</sup> this would not invalidate our position, viz., that consciousness exhibits no physical signs; for in some cases—in that of the frog, for example—whole brain or no brain makes no difference in our ability to judge whether consciousness exists or not. The headless frog struggles to remove the burning acid just as the sound-headed frog would do; and the assumption that pain is felt in one instance and not in the other is purely gratuitous. Consequently the experiments of Flourens and Pflüger, though fully establishing the relation between certain physical expressions and the brain, do not (according to the canons of positive science) prove that which they are adduced to prove—the connection between brain and consciousness. The inference to consciousness at all,

<sup>1</sup> See *The Relations of Mind and Brain*.

as to something not in any way apprehended by our senses, is assuredly as ontological in character, as is the belief in ghosts or in spirit-rapping.

It doubtless may, and will, be ascertained whether whole, or part, or what part of the brain is related to this or that *movement*. But knowledge can never reach that which transcends possible perception. Consciousness can never be visible, nor tangible, nor ponderable, nor measurable, nor appreciable by any sense we possess. It is never manifested by physical trace of any kind. It never makes its *appearance* under any form whatever, and it cannot be classed with phenomena, or mixed up with phenomena, or treated as phenomena are treated. The most physiology can tell us will be, that certain nerve-centres respond in such and such a way to appropriate stimuli.

As with the frog, so is it with man. His acts, his looks, his gestures can give no faintest indication of consciousness. Touch the stop and the overture begins. Let him sing or howl; let him swear by all his gods he is suffering tortures, or that he is in an ecstasy of delight, physiology may account for every contortion or grimace; every nerve-wave may be traced throughout its circuit; the very rate at which it travels may be accurately ascertained; the force expended may, and possibly will, come to be expressed in foot-pounds. And inasmuch as one and all consist of mechanical movements, inasmuch as feeling cannot, *quâ* feeling, be recognised by science either as an efficient cause, or as a link in the physical chain, or as motive-energy, the complete set of these movements must be ascribed to an unbroken series of antecedent movements; and consciousness must be disallowed as a superfluous entity which nowhere becomes apparent.

But what, I ask you, is the position to which this reduces physiology? If physiology pretends to interpret mental facts in addition to its proper business with vital phenomena, then the position in which the above conclusions place it is a *reductio ad absurdum*. For that which

is true of the least of man's voluntary acts is equally true of the greatest; and physiology is compelled to hold that though he act "precisely as if he possessed the intelligence ascribed to men," every act of his life is nevertheless automatic. He may write like a Shakespeare or think like a Newton; his life may be as pure as Christ's or as foul as Caligula's; physiology is compelled to explain any case you please, if it attempt explanation at all, on purely scientific principles of "Push and pull."

Heaven forbid that we should be ungrateful to Science! It covers our backs, and fills our bellies, and puts money in our purses. For all that, we need not be its slave. Yet it seems to me we are in no little danger just now of setting it up as a despot. Physiology and metaphysics will never go in couples; for it is a dogma of physiology that consciousness is elaborated by and out of things which are what they seem. That this is false doctrine is the very business of philosophy to make transparent. Physicists, one and all, pretty nigh, scout the notion of taking things for what they seem. They hold profoundly metaphysical conceptions about relative reality, and prove their doctrine by the hypothesis—or some such—that consciousness is a mode of motion; meaning all the time, that the higher, the more ultimate, reality is motion as we know it.

Far be it from me to deny that the only interpretation to be put upon every physiological theory of relation between body and mind is, that as the brain is so is the mind. Indeed it is impossible for any man of science who relies *upon his senses*, and has to deal with things as if they were exactly what his senses report them to be, to doubt the fact for one instant. The least variation either in quantity, or quality, or convolution, of brain-substance, produces a corresponding variation in the whole external world of, and in the entire conduct of, the owner of that brain. I myself am as satisfied of this as I am that my head does not grow beneath my shoulders; but I am equally certain that neither my head nor my brain is in any save a

phenomenal sense what I or any physiologist take them to be, and consequently that the explanation—the ultimate cause of my consciousness—is not what I or any one may take that to be.

Science claims to have established as fact that brain is the seat of consciousness. What is the consequence? Why, that we have no immediate knowledge of an external world. But see what the representative theory of knowledge is worth. As Sir W. Hamilton puts it: "To account for the possibility of an unknown external world, the hypothesis of *representation* is devised; and to account for the possibility of representation, we imagine the hypothesis of an external world."<sup>1</sup> The mind, as has been shown, must "be supposed to know before it knew."

So vastly important is it for philosophy and theology to refute the explanation which physiology gives of mind, or at all events to attenuate it to the insignificant and innocuous degree of relative or scientific value which at the utmost it possesses, that we must still go on piling proof upon proof that things in themselves cannot be what we take them to be.

Let us consider once more the mechanical or materialistic theory of perception. What is said to happen when we see a falling stone? "Light-waves keep emanating from the falling stone, and intervene in countless numbers between it and the retina of the observer. When they strike the retina, they send waves therefrom along the optic nerve to that part of the brain in which the waves have concomitants in consciousness."<sup>2</sup> Now the movements of the stone and the movements in the brain are separated from each other both in space and time. Nevertheless, somehow or other, the latter is accompanied by a mental representation of the former. How does it happen that the conscious state evolved should stand in such a relation to the falling stone as to be a mental representation of that alone? The movement of the

<sup>1</sup> *Discussions on Philosophy*, p. 64.

<sup>2</sup> *Herbert*, p. 175.

stone, remember, is remote, and only communicated to the brain "by impact from particle to particle, according to the laws of mechanics," through the intervening space. Yet none of the intervening and connecting movements are represented in consciousness. The distant movement is the only one known. Why are the myriads of approximate antecedents to the perception left out of the account and the distant movement alone perceived? It is admitted that the distant movement is known only through the near. Yet what resemblance can there possibly be between the nerve-changes in the brain and the falling stone which is so distantly related to them? One group of movements result from the other; but the notion that the one group should resemble the other, that the movements inside the skull set up by the light-waves emanating from the stone should in any conceivable way be like the movements of the stone, and therefore that these distant movements alone should be represented, is of course absurd.

"Not only, therefore, is there no special connection between the orange and the perception of it, nothing to justify us in saying that we perceive it, or that *it* has the property of exciting sensation in us; but we have no proof that it exists, for our only evidence of its existence is that our perceptions give us what it is proved that they cannot give us—a representation of it."<sup>1</sup>

What are called the truths of science are assumed to possess the highest degree of certainty we are capable of arriving at. This is indisputably true as far as it goes. But it is only a shallow truth; a deeper underlies it. It is true thus far: The truths of science possess the highest degree of certainty that *our senses* are capable of arriving at. It is true only so far as things are what they seem. With respect to the sense-world, we have clearly no concern but with appearances. And with respect to these, a man is justly accounted mad, *i.e.*, *out of his senses*, if he

<sup>1</sup> *Herbert*, p. 183.

take such for other than they seem to all instructed persons *in* their senses. The moment we begin to reason from these appearances to things which do not appear—such, for instance, as God, or consciousness, or moral freedom, &c.—we are lost in impenetrable confusion; and the more we struggle to get out of it, like eels wriggling on a line, the worse we make the entanglement.

In the passage quoted from Dr. Carpenter at page 146, proof was offered that we are not conscious of what takes place either within our own bodies or outside of them, “unless,” as Locke had long ago said, “the motion be continued to the brain.” The proof is that sensation, and therefore perception, of the impression ceases the instant the nerve is severed which conveys this motion inwards. It is not, therefore, the impressing object, whether this be our own bodies or something external to them, which we are aware of, but a change in the state of certain portions of the substance of the brain. Certain of these states of the brain substance are for us as symbols of external objects. It is by degrees probably that we come to accept them as external objects themselves. It is evident, however, from the operation just mentioned, that all we are conscious of are, and remain, states of brain.

We have other proofs that these symbols (which we never doubt our ability to interpret correctly) are demonstrably illusive. Some fifty years ago it was ascertained by Johannes Müller that the nerves appropriate to each of our senses had a specific action of its own;<sup>1</sup> that, for example, the optic nerve, *however stimulated* to action, sets up a sensation of light; the nerves of the ear, however stimulated, give a sensation of sound; the nerves of the skin sensations of touch; and so on. Thus the same kind of sun rays are apprehended as warmth when they excite the nerves of the skin, and as light when they act on the optic nerve. Which then are they? warm or luminous? You may perhaps say both; yet one has no proof that either

<sup>1</sup> Helmholtz, *Popular Scientific Lectures*, p. 390.

is anything but a brain-change set up by a particular class of nerve-fibres. "Pressure upon the eyeball, a feeble current of electricity passed through it, a narcotic drug carried to the retina by the blood, are capable of exciting the sensation of light just as well as the sunbeams."<sup>1</sup>

The difference between one colour and another, and between daylight and heat, depends on the length of the periods of vibration. So is it with the difference between one note and another; and it is quite conceivable that ears might hear what to us is colour, or that eyes might see what we call sound. From beginning to end the changes in the brain and the causes of them are changes of motion; and if electricity is a mode of motion, and we can *taste* that, why might not any mode of motion be sapid, either what we call a colour or a sound? It seems to me highly probable that insects and other animals, whose actions are a mystery to us, may have senses which transmute smell, colour, sound, and especially changes in the condition of the atmosphere, into perceptions for which we have neither name nor thought; and that colour or sound no more resembles for them what we take these to be than, according to our notions, they resemble each other. For these reasons it is conceivable that worlds may exist where all things are known only as motion proper; and other worlds where motion, as we conceive of it, is not known at all. For these reasons, also, I find no more difficulty than John Mill found in conceiving a world where two and two do not make four.

What sound or colour or anything else really is in itself *apart from our perception of it*, we know no more than we know what motion is; for though we reduce all to motion, this is only known to us as a brain change, like everything else, and of course the brain-change itself is as much a mere appearance as the rest. "The most complete difference offered by our several sensations, that, namely, between those of sight, of hearing, of taste, of smell, of

<sup>1</sup> Helmholtz, *Recent Progress of the Theory of Vision*, p. 257.

touch—this deepest of all distinctions, so deep that it is impossible to draw any comparison of likeness or unlikeness between the sensations of colour and of musical tones—does not, as we now see, at all depend upon the nature of the external object, but solely upon the central connections of the nerves which are affected.”<sup>1</sup>

Is it possible, then, to dream of placing an iota of dependence on such false witnesses as our senses? They may be made to tell us anything, or rather they have but one account to give of whatever happens. They are like the electric bells in an hotel. Press a particular knob, and a particular number instantly presents itself in the sensorium. We know no more than the *concierger* who or what rang the bell. We are aware of a particular sign which always stands for one and the same fact. Motion is imparted to one end of a wire or a nerve, and a given number or a special sensation is suddenly manifested at the other. This is absolutely all we can know.

In support of his assertion that “Realism is the only rational creed,” Mr. Spencer denounces the rational inferences from such truths as illusory. It is a mistake, he tells us, to believe “that our cognition of logical necessity has a higher certainty than our cognition of anything else.” “That it is possible by a chain of syllogisms to gain a conviction more positive than any conviction immediately derived from the senses, is the assumption which every metaphysical argument tacitly makes.”<sup>2</sup> And this he calls “a superstition in mental dynamics.” Why not call it “a superstition in physiological operations”? For upon the latter, and not upon mental dynamics, Müller’s law of the specific action of the senses takes its stand. But although Mr. Spencer claims for intuition more certain validity than can be obtained by reasoning, his whole system goes to show that “the perception by which an object is known as such or such is always what is called an *acquired* perception.” *The entire process of per-*

<sup>1</sup> Helmholtz, *ubi supra*.

<sup>2</sup> *Principles of Psychology*, § 13.

*ception is inferential.* It is a highly complicated process, built up of successive mental acts, which, to all intents and purposes, are chains of syllogisms. "All psychologists," he himself says, "concur in the doctrine that most of the elements which go to make up the cognition of an observed object are *not* known immediately through the senses, but are mediately known by an instantaneous and unconscious *ratioeination*. Before a mere visual impression can be developed into a perception of the thing causing it, there must be added in thought those attributes of solidity, trinal extension, size, quality of surface, &c., which, when united, constitute the nature of the thing as it is known to us. *Though these seem to be given in the visual impression, it is demonstrable that they are not so, but have to be reached by inference.*"<sup>1</sup>

We have elsewhere sufficiently dwelt upon the fact that all perception involves the establishment of relations; and, as Mr. Spencer says, "it becomes manifest that, from the most elaborate demonstration down to the simplest intuition, the directness or indirectness with which the relation is established is wholly a matter of degree." If this be true, as it assuredly is,—if perception is but an inferior instance of reasoning, what is there in the inferior process which entitles it to supplant the superior?

We may conclude this letter by reference to a point which I daresay you have thought I might have come to sooner. I have endeavoured to satisfy you that our knowledge is limited to appearances; and that of these we can know nothing more than that they are appearances, and that these appearances cannot possibly have any corresponding realities (apart from our perceiving minds) resembling perceptions themselves. Assuming the causes of these perceptions to possess objective reality, whatever they are, there is no certainty which can be reached by human reason greater than this,—that they must be absolutely different from what we take them to

<sup>1</sup> *Principles of Psychology*, § 47.

be. Idealists always admit that we can know nothing of an external world, but often add that we therefore cannot know whether the causes of our perceptions resemble the perceptions or not. I go quite beyond this, and say that in the foregoing considerations we have conclusive evidence that there can be no question of likeness or unlikeness in the case. Having made the statement, I may be asked: Do I then, like Berkeley, believe that the external world is a purely mental fact? Do I reduce the order of nature to a subjective illusion? to "an orderly phantasmagoria generated by the Ego unfolding its successive scenes on the background of the abyss of nothingness?" No, I do not espouse this extreme form of Idealism, here formulated by Professor Huxley, and once taught by Berkeley and Fichte. I recognise the distinction between the actual and the ideal; but as to external or internal, or cause, as I know them, I abstain from any judgment respecting either the existences or the principle. I maintain it to be quite as thinkable that space and time may have no extra-mental being as that extension may have none. As for the order of Nature, how far it is illusory depends on the use of that word. I am as well aware as Berkeley that the ideas of sense "have a steadiness, order, and coherence, and are not excited at random, as those which are the effects of human wills often are, but in a regular train or series." But I do not conclude with Berkeley that because these things have no dependence upon my will, "there is therefore some other will or spirit that produces them." I believe the order and coherence, as I apprehend them, are mainly due, like everything else apprehended by me, to the constitution and laws of my own mind or spirit. As to other minds, and a world in which "order" inheres, I have no option whether I shall believe or not in their bare existence. But as the existence of mind must for ever remain a mystery, it is impossible that I or any human being can ever know how far this necessity of thought is due to the mind's own laws, how far to things

in themselves. As to the *independent* existence of an external world, the idea is self-contradictory. The thought of anything, since it connects the thing with the thought, *ipso facto* cancels the term independent.

It is not, however, practicable for any man to condense his philosophical opinions into half-a-dozen sentences. The pervading strain of these Letters will, I trust, be sufficiently perspicuous ere the last of them is completed.

## LETTER XII.

No examination of the creeds of our day can be made comprehensible without some acquaintance, however elementary, with those which preceded them. If this opinion justifies a close inspection of Locke's work, it will justify a no less careful study of Hume's; for, deep as is the influence of Locke upon modern philosophy, that of Hume is even more lasting upon modern theology. Above all English thinkers, Hume (to my mind) stands pre-eminent. Who at once so subtle and so lucid, so penetrating and so logical, as Hume? Who so daring, so original, and so thoroughgoing, as he? We may mistrust his philosophy, but he was honest enough to warn us that he mistrusted it too. We may shrink from his conclusions, or what we deem to be his, but we must admire the man who could face them with a courage and a serenity that for ever makes him illustrious amongst the sons of men.

Beginning his "Treatise of Human Nature" with an account of the "Origin of Our Ideas," Hume says, "All the perceptions of the human mind resolve themselves into two distinct kinds, which I shall call IMPRESSIONS and IDEAS."<sup>1</sup> "An impression first strikes upon the senses, and makes us perceive heat or cold, thirst or hunger, pleasure or pain, of some kind or other. Of this impression there is a copy taken by the mind, which remains after the impression ceases, and this we call an idea."<sup>2</sup> "Now, since all ideas are derived from impressions, and are nothing but copies and representations of them, what-

<sup>1</sup> *Loc. cit.*, sect. 1.<sup>2</sup> Sect. 2.

ever is true of the one must be acknowledged concerning the other. Impressions and ideas differ only in their strength and vivacity. . . . An idea is a weaker impression." <sup>1</sup>

Like Locke, Hume gives us a purely physiological explanation of the origin of knowledge. *All* ideas are ultimately traceable to the senses. True it is that, "what never was seen or heard of may yet be conceived; nor is anything beyond the power of thought, except what implies an absolute contradiction. But though our thought seems to possess this unbounded liberty, we shall find, upon a nearer examination, that it is really confined within very narrow limits, and that all this creative power of the mind amounts to no more than the faculty of compounding, transposing, augmenting, or diminishing the materials afforded us by the senses and experience. . . . When we analyse our thoughts or ideas, however compounded or sublime, we always find that they resolve themselves into such simple ideas as were copied from a precedent feeling or sentiment. Even those ideas which at first view seem the most wide of this origin are found upon a nearer scrutiny to be derived from it. The idea of God, as meaning an infinitely intelligent, wise, and good Being, arises from reflecting on the operations of our own mind, and augmenting without limit those qualities of goodness and wisdom. . . . Secondly, If it happen from a defect of the organ that a man is not susceptible of any species of sensation, we always find that he is as little susceptible of the correspondent idea." <sup>2</sup> These are almost the very words of Hobbes and of Locke; the coming scepticism is already foreshadowed. "Impressions and ideas differ only in their strength and vivacity." It immediately occurs to us that if ideas are like impressions, impressions must be like ideas, and up starts Locke's awkward question, "Whether there be anything more than barely

<sup>1</sup> Sect. 7.

<sup>2</sup> *Essays*, vol. ii. § 2. See also *A Treatise of Human Nature*, part ii. § 6.

that idea in our minds,—whether we can thence certainly infer the existence of anything which corresponds to that idea?” “We may well ask,” says Hume, “*what causes induce us to believe in the existence of body?*” “It may perhaps be said, . . . The paper on which I write at present is beyond my hand; the table is beyond the paper; the walls of the chamber beyond the table. . . . From all this it may be inferred that no other faculty is required beside the senses to convince us of the external existence of body. But to prevent this inference, we need only weigh the three following considerations: first, that, properly speaking, ’tis not our body we perceive when we regard our limbs and members, but certain impressions which enter by the senses; so that the ascribing a real and corporeal existence to these impressions, or to their objects, is an act of the mind as difficult to explain as that which we examine at present.”<sup>1</sup>

You remember how Locke dealt with the problem. The mind, he told us, can by no means make to itself one simple idea; and, “is there no difference between dreaming of being in the fire and being actually in it?” “Let him put a flint or a football between his hands,” &c. “I send him to his *senses*.” Hume meets him at every point upon his own grounds. The mind, says he, cannot, as you remark, make to itself one simple idea. We must look to our senses for every idea we have, simple or complex. The difference between dreaming and burning is to be sure considerable. This is just the distinction I make between impressions and ideas. The idea lacks the vivacity of the impression; *the impression is a more lively idea*. As to sending me to my senses, I quite agree with you that this question, “like all others of a like nature,” should be determined by experience. “But here experience is and must be entirely silent. The mind has never anything to present to it but the perceptions, and cannot possibly reach any experience of their connection with

<sup>1</sup> *Ubi supra*, part iv. § 2.

objects. The supposition of such a connection is therefore without any foundation in reasoning.”<sup>1</sup>

Berkeley handled the difficulty in another way. He converted it into a proof for the being of God. Hume has an answer for the good Bishop too, though possibly when he wrote it he was thinking of “Father *Malebranche* and other *Cartesians*.” “To have recourse to the veracity of the Supreme Being in order to prove the veracity of our senses, is surely making a very unexpected circuit. If his veracity were at all concerned in this matter, our senses would be entirely infallible, because it is not possible that he can deceive; not to mention that, if the external world be once called in question, we shall be at a loss to find arguments by which we may prove the existence of that Being or any of his attributes.”<sup>2</sup> I may here remark in passing, that this last sentence does effectually debar the idealist from pleading the design argument, but leaves the transcendentalist exactly where it found him.

Hume, be it observed, took off the “break” which Locke had put on when he found his own philosophy running away with him, and allowed the train of reasoning to find its own level. Of course, the whole question about substance now crumbled away. Berkeley had demolished that; but Berkeley never dreamt of the use or abuse to which his ingenious reasoning would be turned. Accepting Berkeley’s proposition that substance is a mere fiction of the imagination, Hume, to whom philosophic truth was the only consequence worth thinking about, went on to say, what we call “mind,” or the substratum of our thoughts or feelings, is just as much a fiction as matter. “Philosophers begin to be reconciled to the principle that we have no idea of external substance distinct from the ideas of particular qualities. This must pave the way for a like principle with regard to the mind, that we have no notion of it distinct from the particular perceptions.”<sup>3</sup>

<sup>1</sup> *Essays*, vol. ii. § 12.

<sup>2</sup> *Loc. cit.*

<sup>3</sup> *A Treatise of Human Nature*, Appendix, vol. i.

What "particular qualities" are to matter, perceptions are to mind. "When I turn my reflection on *myself*, I can never perceive this *self* without some one or more perceptions, nor can I ever perceive anything but the perceptions. 'Tis the composition of these, therefore, which form the self;" and precisely as we assign to the qualities of matter a something in which these inhere in order to account for their continued existence and identity, so "we feign the continued existence of the perceptions of our senses to remove the interruption, and run into the notion of a *soul*, and *self*, and *substance* to disguise the variation."<sup>1</sup> In a word, poor Berkeley loses his *soul* by the very process he devised to save it.

The shortest answer to this last conclusion of Hume's, whereby he disposes of the inward synthesis of thought and feeling, is that of Mr. Green, who truly remarks, "This method at once suggests the vital question whether a mind which thus invents has been effectively suppressed, —whether, indeed, the theory can be so much as stated without a covert assumption of that which it claims to have destroyed?"<sup>2</sup>

No one, however, knew better than Hume himself the contradictions in which his own reasoning involved him. "Having," says he, "thus loosened all our particular perceptions, when I proceed to explain the principle of connection which binds them together, and makes us attribute to them a real simplicity and identity, I am sensible that my account is very defective, and that nothing but the seeming evidence of the preceding reasonings could have induced me to receive it. . . . For my part, I must plead the privilege of a sceptic, and confess that this difficulty is too hard for my understanding."<sup>3</sup>

The reduction of mind to a stream of conscious states, bound together by no subjective unity, is, in fact (as Hume admits), an unintelligible proposition. If mind

<sup>1</sup> *Ubi supra*, part iv. § 6.

<sup>2</sup> *General Introduction to Hume's Works*, § 132.

<sup>3</sup> Appendix.

supposes knowledge, then, as has been shown, conscious states when "loosened" do not constitute either knowledge or mind. When we come to Kant this will be insisted upon.

There can be no point within the whole range of metaphysic that more gravely affects theology than the theory of CAUSATION. The final speculation will not be reached till we have made ourselves acquainted with the "Critique of Pure Reason;" but this is the place to begin our inquiry; first, because in the entire philosophy of Hume there is nothing so distinctly his own as his treatment of causality; next, because it leads us directly to the great question of the freedom of the will; and lastly, because it was historically and logically the antecedent of which the "Critique" itself was the outcome.

When, in contemplating any change or event, we ascribe its occurrence to something or other which existed before it, and call this something its *cause*, we think a connection between the two quite different in kind to that of mere time-succession; like day and night, for instance. We attribute the change to some peculiar force or power, analogous to that which we ourselves exercise over our limbs; at all events, we have a notion that there is some mysterious reason *why* a physical cause should be followed by its particular effect and no other, and which reason, if known to us, would enable us "to foresee the effect without experience."

Hume astounded the philosophical, the theological, and even the scientific world, by the announcement that this belief—possessed by every human being, nay, by the lower animals themselves—was, after all, not a *necessary* belief, but a mere result of habit.<sup>1</sup> All ideas, he declared, are

<sup>1</sup> "I could adduce to you a whole army of philosophers previous to Hume who had announced and illustrated the fact."—*Sir W. Hamilton, Metaphysics*, vol. ii. p. 389. See also Dugald Stewart's *Philosophy of*

*Human Mind*, vol. i. Note D. With this, however, we have nothing to do. Hume's presentment of the doctrine gave the impulse to the philosophy which was its sequel.

derived from experience. Experience tells us nothing of this mysterious agency. One event follows another. This is all we know. "The impulse of one billiard-ball is attended with motion in the second. This is the whole that appears to the outward senses."<sup>1</sup> Still, the universality of the belief has to be accounted for. If external objects themselves do not give us the idea of "power," where do we get it from? May it be by reflecting on the operations of one's own mind? Is it from consciousness of a power to move one's limbs? But what, asks Hume, do we know of "the union of soul with body?" Were the planets under our control, could we move mountains, the fact would not be more extraordinary or less comprehensible than it is. Besides, how can we be said to be conscious of a power which a sudden palsy might deprive us of, without our knowing the loss until we tried, and failed, to move? Again, the will does not directly act upon our limbs. The motion is propagated through nerves and muscles, "and animal spirits, and perhaps something still more minute and more unknown." All of which "is to the last degree mysterious and unintelligible."

Unable to account for the belief in this way, he considers whether the type of *power* may not be that of self over volitions. "So far from being conscious of this energy in the will, it requires as certain experience as that of which we are possessed to convince us that such extraordinary effects do ever result from an act of volition." In a word, our knowledge is after the fact, not before it; and, as with purely physical phenomena, all we know is that one event follows another. He decides, in fine, "That this idea of necessary connection among events arises from a number of similar instances which occur of the constant conjunction of these events. . . . The customary transition of the imagination from one object to its usual attendant is the sentiment or impression from which we form the idea of power or necessary connection.

<sup>1</sup> *Essays*, § 6.

Nothing further is in the case. Contemplate the subject on all sides; you will never find any other origin of that idea."<sup>1</sup>

In the "Treatise on Human Nature," it is only the consequences of his doctrine that are more clearly set forth. His sceptical attitude towards science is at least as apparent as it is towards theology. The inference that like antecedents *must* have like consequences, that under similar conditions past experience would always be repeated, "that the course of Nature continues always uniformly the same," is "not intuitive, neither is it demonstrative." "'Tis easy to observe that, in tracing this relation, the inference we draw from cause to effect is not derived merely from a survey of these particular objects, and from such a penetration into their essences as may discover the dependence of the one upon the other. There is no object which implies the existence of any other if we consider these objects in themselves and never look beyond the ideas which we form of them. Such an inference would amount to knowledge, and would imply the absolute contradiction and impossibility of conceiving anything different. But as all distinct ideas are separable, 'tis evident there can be no impossibility of that kind. When we pass from a present impression to the idea of an object, we might possibly have separated the idea from the impression, and have substituted any other in its room. 'Tis, therefore, by EXPERIENCE only that we can infer the existence of one object from another."<sup>2</sup>

This is Hume's famous theory of causation. The whole affair is one of custom and habit. See now how profound are its consequences. "The question," says Kant, "was not whether the conception of cause was just, serviceable, and indispensable in relation to all natural sciences, for this had never been disputed by Hume, but whether it could be conceived *a priori* by the reason, and thus pos-

<sup>1</sup> *Uli supra*, § 7.

<sup>2</sup> *Loc. cit.*, part iii. § 6.

sessed an internal truth independent of experience which would make it admit of more extended application, not limited to matters of experience.”<sup>1</sup> “What was the origin of the notion? If only this point were cleared up, the conditions and limitations of its validity would follow of themselves.” Yes, indeed; and mentalists, and sensation-alists too, hoist with their own petard! Leibnitz’s notion was that external experience is in reality internal development. The causal judgment, therefore, is from within. Just so, said Hume. But on this very score he denied, what Leibnitz on the same score thought to prove—*necessity*. Locke, on the other hand, trusts to his fundamental doctrine—experience—to prove, by means of causality, the existence of God. “If, therefore, we know there is some real being, and that nonentity cannot produce any real being, it is an evident demonstration that from eternity there has been something, since what was not from eternity had a beginning, and what had a beginning must be produced by something else.” (The proof that this “something else” was a “knowing and intelligent being” is the fact that we are knowing and intelligent beings.) Hume accepts Locke’s Sensationalism with all his heart; but adds, so far from the maxim that *whatever begins to exist must have a cause of existence* being an intuitive certainty, we “shall find ’tis of a nature quite foreign to that species of conviction.” “We can never demonstrate the necessity of a cause to every new existence, or new modification of existence, without showing at the same time the impossibility there is that anything can ever begin to exist without some productive principle; and where the latter proposition cannot be proved, we must despair of ever being able to prove the former.”<sup>2</sup> If there be no *necessary* connection between any event and its antecedent, why should the beginning of being have had any antecedent such as we call cause? It is in vain Locke points at the absurdity of supposing nonentity

<sup>1</sup> *Prolegomena*.

<sup>2</sup> *Treatise*, &c., part iii. § 3.

could produce any real being. This would be sound enough argument if it were necessarily true that, "whatever had a beginning must be produced by something else." "But," says Hume, "'tis the very point in question whether everything must have a cause or not; and therefore, according to all just reasoning, it ought never to be taken for granted."

The theological argument derived from cause and effect falls to the ground. Hume pretends to lament the disaster. "Nothing," says he, "is more curiously inquired after by the mind of man than the causes of every phenomenon; nor are we content with knowing the immediate causes, but push our inquiries till we arrive at the original and ultimate principle. We would not willingly stop before we are acquainted with that energy in the cause by which it operates on its effect; that tie which connects them together, and that efficacious quality on which the tie depends. This is our aim in all our studies and reflections; and how must we be disappointed when we learn that this connection, tie, or energy lies merely in ourselves, and is nothing but that determination of the mind which is acquired by custom, and causes us to make a transition from an object to its usual attendant, and from the impression of one to the lively idea of the other? Such a discovery not only cuts off all hope of ever attaining satisfaction, but even prevents our very wishes, since it appears that when we say we desire to know the ultimate and operating principle as something which resides in the external object, we either contradict ourselves or talk without a meaning."<sup>1</sup>

In spite of this lament, is it not certain that Hume must have felt that the good immeasurably outweighed the evil consequences of his discovery? "Let men be once fully persuaded of these two principles, *that there is nothing in any object considered in itself which can afford us a reason for drawing a conclusion beyond it, and that*

<sup>1</sup> Part iv. § 7.

even after the observation of the frequent or constant conjunction of objects we have no reason to draw any inference concerning any object beyond those of which we have had experience ; I say, let men be once fully convinced of these two principles, and this will throw them so loose from all common systems, that they will make no difficulty of receiving any which may appear the most extraordinary."<sup>1</sup> And a glorious climax too! The tyranny of Dogmatism is annihilated. If knowledge is thus undermined, the ground is cleared for belief.

Science and Religion have, you may rely upon it, fought lustily with this overwhelming scepticism,—Religion, as it seems to me, with utter blindness to its own interests. But Science has an answer which, from its point of view, is worth considering. "All events," says Hume, "seem entirely loose and separate. One event follows another but we never can observe any tie between them. They seem *conjoined*, but never *connected*." This "entirely loose and separate" suggests forthwith the modern doctrine of the "Correlation of Forces." In this doctrine we have that which justifies the notion, however vague, of a connection and a "tie."

Professor Adamson remarks, that "matter in motion seems the one objective fact to which we can properly apply the category of cause."<sup>2</sup> The causal nexus, as known to us, always consists in a transmuted mode of motion. The "tie," therefore, between cause and effect is in the relation which they mutually bear to the special laws and principles of Nature under which they fall. Every species of phenomena belongs to a class more comprehensive; and by referring an event to its appropriate class or higher genus, we explain its nature, and, by showing on what it depends, establish the rational relation between an effect and its cause. Speaking of the intimate union between the two, Baden Powell remarks, this "is no other than that of the particular individual case with the more

<sup>1</sup> Part iv. § 12.

<sup>2</sup> *Philosophy of Kant*, p. 174.

general law; of that law with some still more comprehensive principle; and of this again, in turn, with some yet more universal theory; thus establishing not merely connections but explanations.”<sup>1</sup>

The notion of *power* is not so easy to find a plea for. In spite of Hume's objection, on the ground of our ignorance, to the derivation of the idea from ourselves, there can be no doubt that this is where it comes from. In the first place, every conscious act which meets with resistance is accompanied more or less by conscious effort.<sup>2</sup> There is also, as Mill says, “a natural tendency of the mind to facilitate its conceptions of unfamiliar facts by assimilating them to others which are familiar.” Or, as Mansel puts it, “a natural tendency to identify as far as may be other agents with themselves.” When, therefore, we see an object moved by the wind, say, we infer that an effort is needed to overcome its resistance similar to that which resistance calls forth in ourselves.<sup>3</sup>

Taking this to be the explanation of the belief in power in ordinary instances of physical causation, we may next ask whether we are justified in the belief as regards the nature of volition? And further, whether moral events and physical events are subject to the *same* law of causation? This brings us to that great “meta-physical deadlock,” the question of the Freedom of the Will.

<sup>1</sup> *Unity of Worlds*, Essay i. § 4.

<sup>2</sup> Cf. Herschel's *Outlines of Astronomy*, chap. viii.

<sup>3</sup> Cf. Mill's *Examination of Hamilton*, p. 306.

## LETTER XIII.

THE problem, without its many complications, may be succinctly stated as follows :—If the will is determined by motives, and the motives by other external and internal—objective and subjective—antecedents, the regress is infinite. It is a delusion to suppose the will is free, if the will depend on regular causes, in the *same way* as physical events do.

This generally involves the notion that, between physical events and their causes, there exists a *necessary* connection ; hence if a similar relation obtain between volition and its causes, our acts follow *necessarily* from an infinite chain of antecedents. We are then not responsible *originators* of our acts, but mere links in the “adaman-tine series” of causes and effects. This is the doctrine of philosophical necessity. How to reconcile it with the belief in moral freedom ?

To confine ourselves first to the question, Is the principle of causality which determines human actions the same in kind as that which determines all other events ? As Hume makes this inquiry, we cannot do better than take his answer. He points out the regularity in the course of moral events, observing that this has the perfect constancy of physical law. He notices the striking uniformity in the actions of mankind in all nations and ages. Similar motives (*cæteris paribus*, he should have added) always produce similar actions. “Ambition, avarice, vanity, friendship, generosity, public spirit, these passions, mixed in various degrees and distributed through society, have been from the beginning of the world, and still are,

the source of all the actions and enterprises which have ever been observed among mankind.”<sup>1</sup> The chief use of history (here, by the way, is the anticipation of Comte’s Sociology) is to furnish us with materials for studying the regular springs of human action and behaviour. These records of wars, intrigues, factions, and revolutions are so many collections of experiments by which the politician or moral philosopher fixes the principles of his science. The benefits of experience depend entirely upon our being able to reckon on the uniformity in human motives and actions. Do we sometimes calculate erroneously? This is not to be ascribed to any contingency in the cause, “but from the secret operation of contrary causes.” If we know a man’s character, we can predict his conduct under given conditions. Even “the most irregular and unexpected resolutions of men may frequently be accounted for by those who know every particular circumstance of their character and situation.” Seeming irregularities of conduct are as much the results of laws as are those of the winds and clouds.

So perfect is this reliance on the uniformity of the law of causation, that every voluntary act a man performs is based upon the assurance of it. The artificer labours in the confidence that a purchaser will be found for the fruits of his toil. A manufacturer counts as surely on the artisan working for payment as upon his engines driven by steam. “How could politics be a science if laws and forms of government had not a uniform influence upon society? Where would be the foundation of morals if particular characters had no certain or determinate power to produce particular sentiments, and if these sentiments had no constant operation on actions?” “A man who at noon leaves his purse full of gold on the pavement at Charing Cross may as well expect that it will fly away like a feather as that he will find it untouched an hour after.” Concerning the uniformity of sequence in moral actions,

<sup>1</sup> *Essays*, sect. 8.

therefore, no dispute can be raised. In this respect they in no wise differ from purely physical events.

Is their agreement equally perfect in other respects? In answering this, one source of embarrassment may, I think, be summarily disposed of. The interpretation of the above statement might be, that man is not a free agent because the relations between his acts and volitions, and between his volitions and their physical antecedents, are *necessary* connections, just as the relation between purely physical causes and effects is a necessary one.

Now, whether or not we choose to accept Hume's notion of simple conjunction, it is evident that the term "necessary" is not only inapposite, but altogether misleading, when applied to the sequence of psychical states which precede voluntary action. The misunderstanding between libertarians and necessarians often turns on the misuse of this word "necessity." But its only correct use is to signify compulsion; and compulsion cannot be applied except as opposed to freedom. Freedom, again, has no meaning (as Locke has already observed) except as applied to a moral agent. Only where there is option "to do or to forbear" can there be liberty or necessity. "Those who think that causes draw their effects after them by a mystical tie are right in believing that the relation between volitions and their antecedents is of another nature. But they should go farther, and admit that this is also true of all other effects and their antecedents. If such a tie is considered to be involved in the word necessity, the doctrine is not true of human actions; but neither is it true of inanimate objects."<sup>1</sup>

Still, it is urged, even if "necessity" be inapplicable to physical events, and consequently an incorrect term to describe the connection between *voluntary* acts and the antecedents which lead to them, it must be granted that voluntary acts are consequences, and not beginnings. If they are not necessitated, anyhow they are determined;

<sup>1</sup> J. S. Mill, *Logic*, Book vi, chap. 2.

and being determined, they are not free. Hume notices the difficulty only to evade it. "I pretend not to have obviated or removed all objections to this theory; with regard to liberty and necessity, I can foresee other objections. . . . It may be said, for instance, that if voluntary actions be subject to the same laws with the operations of matter, there is a continued chain of necessary causes, preordained and predetermined, reaching from the original Cause of all to every single volition of every human creature. No contingency anywhere in the universe; no indifference, no liberty. While we act we are at the same time acted upon." This involves us in a mystery "which is very unfit to handle;" and we are advised "to return with suitable modesty to our true and proper province, the examination of common life."

When a man does what he wishes to do, it is nonsense to ask whether he is a free agent. Yet by want of clearness of thought, freedom is sometimes denied to actions, because the actions depend on motives or desires. Thus when Schopenhauer says it is obviously true that, "as a billiard-ball cannot begin to move before it has received an impulse, so a man cannot rise from his chair before he is influenced by a motive,"<sup>1</sup> he (adducing this as an argument against freedom) seems to fall into this error. But when he says, "Man never does but what he wills, nevertheless he always acts necessarily," he means, not only that the act follows the motive, but that the motive itself follows something else; that there is no beginning anywhere;—"while we act, we are at the same time acted upon."

The question is not whether we are free to do as we will,—this very often depends wholly upon external circumstances; but whether we can will as we desire to will. The necessarian denies our freedom to do so. "That every one is at liberty to desire or not to desire, which is the real proposition involved in the dogma of free-will, is

<sup>1</sup> *Freiheit des Willens*, p. 44.

negated as much by the internal perception of every one (!) as by the contents of the preceding chapters.”<sup>1</sup>

So, too, the late Alfred Barratt: “Action follows motive by a law just as necessary and universal as that by which a stone falls from the hand or the sparks fly upward. But it will be said that we thus merely move the question a step backward, and that by throwing new weight . . . into any motive, we can at any time make it the strongest. To this we answer, No; the new weight, by adding which we secure the victory, . . . is itself produced by motive, or, in other words, by association from something which has preceded.”<sup>2</sup>

Schopenhauer illustrates the argument as follows: “It is six o’clock, the day’s work is done. I can now take a walk, or go to the club; I can ascend the tower to see the sunset; I can go to the play. . . . All this depends on me only. I am perfectly free to do as I like. Nevertheless I do nothing of the kind, but go home to my wife with equal free-will. This is just as though water should say, ‘I can make great waves; (yes! in a sea and storm). I can rush tearingly down a fall; (yes! in the bed of the stream). . . . I can even boil and disappear; (yes! at 212° of heat). Nevertheless I do none of these just now, but voluntarily rest peaceful and clear in the mirror-like pond.’ As the water can only do all these things when causes appropriate to one or the other conduce thereto, so man can do what he fancies he is free to do only when the conditions permit. Until the causes present themselves, it is impossible; then, however, he *must*, like the water, act in accordance with the corresponding circumstances.”<sup>3</sup>

“Every action,” says the same writer, “is the product of two factors—character and motive.” Character is formed by circumstances. It depends on organisation, and on all that is implied by the word education. If we only knew a man’s character thoroughly, we could predict his beha-

<sup>1</sup> Herbert Spencer, *Principles of Psychology*, § 207.

<sup>2</sup> *Physical Ethics*, p. 140.

<sup>3</sup> *Freiheit des Willens*, p. 42.

viour in a given situation as certainly as we foresee the action of an acid on an alkali. Schopenhauer, unlike most, is a *consistent* necessarian—he is a fatalist. In his opinion, character “is absolutely unalterable, and always the same”—“ganz unveränderlich und immer derselbe.” “The individual character is innate: it is not a work of art, nor the result of accidental circumstances, but the work of Nature herself. It proclaims itself already in the child, and shows in miniature what it will by and by be when full grown. Hence it is that two children, subjected to precisely similar education and surroundings, exhibit radically different characters in the clearest way possible; and the very same characters will be theirs as old men. The groundwork of the character is in truth hereditary.”

The theory of Mr. Spencer deserves more careful inspection. In a former letter Mr. Spencer was said to define life as “the continuous adjustment of internal relations to external relations.” The theory here propounded is, that willing is the conscious self-adaptation of the organism to circumstances, just as reflex actions are its automatic changes to the same end. Desire is the conscious state produced by imperfect coherence and complexity. “If the inward connection is perfectly organic, the action is of the reflex order, either simple or compound, and none of the phenomena of consciousness proper exist. If the inward connection is not perfectly organic, then the psychical changes which connect the impressions and motions are conscious ones.”<sup>1</sup> Whenever the process of adjustment elicits consciousness, memory, reason, feeling, and will must all be simultaneously evolved. “When, after the reception of one or more complex impressions, the appropriate motor changes become nascent, but are prevented from passing into immediate action by the antagonism of certain other nascent motor changes appropriate to some nearly allied impression, there is constituted a state of consciousness, which, when it finally issues in

<sup>1</sup> *Principles of Psychology*, § 205.

action, exhibits what we term volition." The conflict between different sets of nascent motor changes is what we call deliberation. The ultimate victory of the strongest is what we call choice. "Each set of nascent motor changes arising in the course of this conflict is a weak form of the state of consciousness which accompanies such motor changes when actually performed, . . . is an idea of such motor change." The "passing of an ideal motor change into a real one is that which we distinguish as will." The only difference between voluntary and involuntary acts is that the first is a "mental representation of the act followed by a performance of it," while the second takes place "without any previous consciousness of the movement to be made." "The cessation of automatic action and the dawn of volition are one and the same thing."

The whole affair, however complicated, is in the end to be traced back to a relation between impressions and motions. "Certain impressions, immediately made upon the senses or afterwards mediately suggested by some other impressions, make nascent certain appropriate motor changes, and certain impressions connected with such changes; these again make nascent other changes and other impressions; and so on to all degrees of remoteness, producing a group of ideal actions and consequences." The proof that the process of willing is this process of adjustment,—brought into consciousness by the "increasing complexity and imperfect coherence of automatic changes,"—is that "memory, reason, feeling, and will, simultaneously disappear in proportion as, by their habitual recurrence, any psychical changes become automatic."

Having set forth his argument with a lucidity which cannot be conveyed in a few detached sentences, Mr. Spencer goes on to inquire into "the nature of the current illusion." This, he says, arises from speaking and thinking of oneself as "something separate from the group of psychical changes constituting the impulse." "It is alike true that he [man

himself] determined the action, and that the impulse determined it, seeing that during its existence the impulse constituted his state of consciousness, that is, himself."

So far as it goes, the greater part of this seems to me undeniable. Yet it does not quite touch the quick of the problem either. That which most deeply concerns us—the practical consequence of the business—is, what power we have to form our own characters, or (and this comes to the same thing) how far "one is at liberty to desire or not desire." Mr. Spencer emphatically denies that we have any such liberty. From his point of view, indeed, this way of putting the question is irrelevant; for "we" are nothing but a state of consciousness, simple or composite, at the given moment. This state of consciousness—the psychical self—is the counterpart (I suppose we must call it) of the physical self or composite state of the organism at the given moment. This latter is the product of an infinite series of physical adjustments up to the given moment. These adjustments are always going on automatically (according to the laws of evolution) in the inorganic world; but become conscious changes—known to us as feeling, memory, reason, and will—in the higher organic world, whenever the necessary adjustments involve complex changes which require time and repetition to thoroughly cohere. If this interpretation be correct, if it be permissible thus to force Mr. Spencer's hand, the result, as it appears to me, is not distinguishable from fatalism.

We have next to see what the Libertarian has to say for himself; and what may be the impartial view of Indifferentism.

The Libertarian makes his appeal to consciousness, and declares that consciousness testifies immediately to the absolute efficiency of the will. The will is "that which of *itself* makes anything begin to be." "Mind," says Dr. M'Cosh, "is a self-acting substance, and hence its activity and independence." The true libertarian goes so far as to assert that the will has a power of initiating action inde-

pendently of motives ; or, supposing motives to be exactly balanced, that the will has the power of self-determination—the casting-vote, as it were. Motives, in his opinion, have to be eliminated, like all other antecedents. How else (thinks he) is he to gainsay the Necessarian, who argues that motives are dependent on pleasure and pain, or, at any rate, that motives are at once antecedents and consequents ; which reduces volitions to effects, and thus robs them of true spontaneity ? “ In reply to the question, Are our volitions, like other events, the result of causes ? Certainly not, in the only intelligible sense of the term. I have only two positive notions of causation : one, the exertion of power by an intelligent being ; the other, the uniform sequence of the phenomenon B from A.”<sup>1</sup> “ In every act of volition, I am fully conscious that I can at this moment act in either of two ways, and that, all the antecedent phenomena being precisely the same, I may determine one way to-day and another to-morrow.”<sup>2</sup> In sum, Mansel boldly affirms : “ There is no alternative but to admit, in the fullest sense, the freedom of the will, by denying the applicability of the principle of causality to human actions.”

Consciousness is the stronghold of the libertarian. “ We must conclude, then,” says Mr. Sidgwick, “ that against the formidable array of cumulative evidence offered for Determinism there is but one opposing argument of real force : the immediate affirmation of consciousness in the moment of deliberate action. And certainly, in the case of actions in which I have a distinct consciousness of choosing between alternatives of conduct, one of which I conceive as right or reasonable, I find it impossible not to think that I can now choose to do what I so conceive, however strong may be my inclination to act unreasonably, and however uniformly I may have yielded to such inclinations in the past. . . . I recognise that each concession to vicious desire makes the difficulty of resisting it greater when the desire

<sup>1</sup> H. L. Mansel, *Prolegomena Logica*, p. 334.

<sup>2</sup> *Ibid.*, p. 166.

recurs; but the difficulty always seems to remain separated by an impassable gulf from impossibility.”<sup>1</sup>

What is this appeal to consciousness worth? Protest is always made against the admission of consciousness as a witness. To apply this test of certitude to anything beyond one's present state is more than it is available for. If it has reference to the past, “I need a faithful memory to support me in the advance I have made, and we know that memory is anything but infallible.” If it has reference to the future, “by the very act of extending the affirmation I trench upon the region of fallibility.”<sup>2</sup> Consciousness, says the Determinist, is an abstraction which you are converting into an arbitrator. But consciousness is not a faculty in itself. The term merely expresses the fact of being aware of any particular state of body or mind at a particular moment. How can I be conscious of something that may never happen—that *if* I will I *shall* move my arm? To say I am conscious I could have willed this instead of that, is to assert consciousness of what never did happen. Restricted to the passing moment, consciousness of change of feeling is infallible. But you have no right to borrow the term because it is infallible in its own sphere, in order to emphasise the strength of your convictions in some other.

I am not quite sure this is altogether as true of willing, as of the act which follows it. I am conscious that I can do as I will. No; this is saying too much. I have come to say, I am conscious I can do so and so, from the act having invariably followed the volition. But, as Hume observes, between the act and the willing of it I may be smitten with palsy. For all that, we seem to be conscious of a power of self-determination,—not of acting, but of willing,—in spite of strong internal sollicitation in an opposite direction. Until the fact is accomplished it is a thing of the future; the feeling “trenches on the region

<sup>1</sup> *The Method of Ethics*, p. 56.

<sup>2</sup> A. Bain, *Emotions and Will*, chap. xi.

of fallibility." But it is also a comprehension of conditions that are actually present; it intuitively affirms there is nothing at the existing moment to impede my will. It is like being conscious that there is sufficient space to move in; though, until the trial is made, the proof of actual accomplishment is of course wanting.

Mansell's denial of the applicability of the law of causality to human actions will be considered presently. His conviction that he could act in either of two ways, "all the antecedent phenomena being precisely the same," is obviously erroneous. For, whichever way he decided, that way must have been determined by a state of mind different from the state required to determine the other way; the last antecedent, therefore, of each of two different decisions could not possibly be the same; unless, to be sure, we accept the notion that the "will of itself makes anything begin to be." But this would simply render our actions purposeless.

The notion that motives, although themselves consequents, annul our freedom; that we are not at liberty to desire or not desire, in the sense that the desire does not positively originate with ourselves, is, in my opinion, fraught with confusion. Mr. Spencer having admitted that a man himself—taken as a group of physical changes which constitute the impulse—determines his own actions, adds: "But to say that the performance of the action is therefore the result of his free-will, is to say that he determines the cohesion of psychical states by which the action is aroused; and as these psychical states constitute himself at that moment, this is to say that these psychical states determine their own cohesions, which is absurd."

Is the conclusion absurd? Mr. Spencer may be perfectly right in identifying the man with his motives, and thence arguing that, after all, it is the man himself who determines his actions. But is it sound reasoning to allow to the man this power of self-determination, and then, by

tacitly identifying the motives with physical sequences, denounce self-determination as an absurdity?

When Schopenhauer, or Barratt, or whoever it may be, says, "The new wish, by adding which we secure the victory, is itself produced by motive, or, in other words, by association from something which has preceded;" the abstraction, motive, is thought of as something apart from the man himself. So that, as a rule, to say a man is influenced by motives, and these motives by "something which has preceded," implies that to this extent his action is not that of a free agent: one might almost say, so far as motive has to do with them, a man's acts are not his own. Mr. Spencer steers clear of this absurdity; yet, as it would seem, persists in regarding mental and physical changes as in *all* respects the same; and in so doing either lands us in fatalism, or leaves us sticking as fast in the mire as ever.

No one who maintains that man's acts resemble physical events, in being subject to the law of causation, can pretend that the two are not unlike in respect of the conscious element which enters into the former. It is this that constitutes the generic difference of moral acts; and, as I contend, makes man a free and accountable agent. Motive is only a general name for the mental condition which induces voluntary action. This mental state may be a present feeling, a revived feeling, or a prospective feeling; whichever it be, its ultimate reference is to pleasure or pain, or, at all events, to the man himself.<sup>1</sup> However many motives or mental states have gone to the making of the final motive, one and all were the man's own mental states. And as any particular man's sensi-

<sup>1</sup> Many acts have no direct reference of this kind. They may be performed for their own sake alone, without a thought of any more distant motive. But even where habit has rendered certain acts completely automatic, the process

of "adjustment," if ever a conscious one, must have had reference to self. As Locke shrewdly says, "The motive for continuing in the same state or action is only the present satisfaction in it; the motive to change is always some uneasiness."

bility never existed until his nervous system existed, that man's voluntary acts, in so far as they depend on his sensibility and intelligence—which of course is *only in part*—are absolutely unlike physical events; for, in so far they positively originate with him. To say they potentially existed previously as *mind-stuff*, or as some other mode of motion, or as any other fantasy that “metempiric” may find a name for, involves at least as great a mystery as that which it affects to elucidate. It can, therefore, have no theoretical worth for the purposes of explanation.

Man neither made himself nor the world he lives in: it is quite certain therefore that he is not absolutely free. But it is by no means clear that his belief in *limited* freedom is an illusion. To argue that our very sensibility deprives us of freedom, that because our susceptibility of pleasure and pain and our moral dispositions, or whatever may be the grounds of them, are innate, we are therefore neither more nor less free than the clouds, may be true so far as consistency of language is truth; but the truth plants those who insist upon it in a palpable contradiction. For if such susceptibility be incompatible with freedom, then to be free we ought to be insensible, without desires, without purpose, and act as mere machines.

Machines—automata, in fact—we must be, unless Realism is a falsity. A glance at the previous letters of this series will show how impossible it is to take any other view, *unless* we have recourse to Transcendentalism. Without such aid we must, like Dr. Huxley, “hold with the materialist that the human body, like all living bodies, is a machine, *all* the operations of which will, sooner or later, be explained on physical principles.”<sup>1</sup> With him we must confess our inability to see any reason for believing that mind acts upon body. The contrary opinion would saddle us with the untenable hypothesis of “a creation of energy.” “Were it possible,” says Lange,

<sup>1</sup> *On Descartes' Discourse.*

“for a single cerebral atom to be moved by ‘thought,’ only so much as the millionth of a millimetre out of the path assigned to it by the laws of mechanics, the whole ‘world-formula’ would become inapplicable and unmeaning. But human actions, even, *e.g.*, those of the soldiers destined to plant the cross upon the mosque of Sophia, of their generals, the diplomatists concerned, and so on; all these actions result, scientifically speaking, not from ‘thoughts,’ but from muscular movements, whether these serve to make a march, to draw a sword, or guide a pen. . . . The muscular movements are set free by nervous activity; this arises from the functions of the brain, and these are entirely determined by the structure of the brain, by the sensory conductors, and by the atomic movements of molecular changes, and so on, under the influence of the centripetal nervous activity. We must quite realise that the law of the conservation of energy can undergo no exception in the interior of the brain without becoming wholly meaningless, and we must rise to the conclusion, therefore, that the whole activity of man, individuals as well as peoples, might go on, as it actually does go on, without the occurring in any single individual of anything resembling a thought or a sensation. The glance of man might be ‘just as full of soul,’ the sound of his voice just as ‘moving,’ only that there would be no soul. . . . The two worlds [of unconscious and of conscious beings] are therefore to be absolutely alike, with only this difference, that in the one the whole mechanism runs down like that of an automaton, without anything being felt or thought, whilst the other is just *our* world; then the formula for these two worlds would be entirely the same. To the eye of exact research, they would be indistinguishable.”<sup>1</sup> Mr. Spencer talks of the “insanity of Idealism.” If this be not the insanity of Realism I know not what is.

We have said that, *but* for the voice of our own consciousness, combined with the fact that other sentient

<sup>1</sup> *History of Materialism*, vol. ii. p. 315.

beings behave as we do, there is no ground for believing that man is not an automaton; yet when science explains voluntary action upon purely physical principles it must have recourse to mind. Take any instance: Engaged in concentrated thought, a man rests his head on his hand. He suddenly becomes aware of the unusual throbbing of the temporal artery. He reflects that the action of the heart is unduly taxed. Assuming "thought" to be the cause, he purposely directs his attention to some frivolous pursuit—looks out of the window, or what not. In a few minutes the pulsation has become normal, and his theory of mental influence is thereby verified. Is it possible to explain the subdued action without reference to consciousness? Here was prevision of remote consequences, and recollection of remote experiences, both combining simultaneously to make up the present psychological state from which the motive impulse proceeded. Shall we interpret the remembrance and the prevision as "nascent motor changes?" If so, how could they be *solely* due to other motor changes? Would the excessive action of the heart tend to regulate and adjust itself? The theory, I am aware, is that association, which has already linked one motor change with another, now fires the entire train. But where does the first spark come from? An "impression," we are told. Yes, I grant you, a *mental* impression. Whatever we may think of the will, the whole proceeding must, in the last analysis, be explained by the primary conscious sensation, which in turn admits of no explanation whatever, but which, nevertheless, begins and ends with the man himself.

"That the brain is the organ of mind no one doubts, and that when mental aberrations, of whatever nature, are manifested, the brain is diseased organically or functionally, we take as an axiom."<sup>1</sup> And how are mental diseases treated now-a-days? The important part of the treatment is almost entirely mental. From the physical

<sup>1</sup> Dr. Ferrier, *Localisation of Cerebral Disease*.

side much may be done where morbid action can be traced to excessive or defective blood-supply ; but even here, the use or abuse of *mental* stimulants is the point to be considered. The irresistible evidence is always before us that in some inconceivable way, in some way quite irreconcilable with the teaching of science, mind does act upon body, and that this action cannot possibly be explained by any metaphysical theory which either separates the two, or identifies one with the other.

Schopenhauer quotes Bichat (in support of his own belief that character is unalterable), to the effect that character depends on organisation; and that this is unalterable because we cannot control the circulation, the respiration, &c. The above remarks lead to the opposite conclusion. Muscles are developed by increasing the circulation of the blood in their immediate vicinity. There can be no doubt that the nerve-centres in the brain are strengthened and developed in a similar way. Yet both the bodily and the mental gymnastics requisite for the purpose are often extremely irksome; and we have to force ourselves to the task, by calling up mental states strong enough to overcome the passive resistance of the body.

How upon any mechanical theory can we account for the following? "It is possible by directing your attention to a particular part of your hand to make a determination of blood to that part which shall in time become a sore place. Some people have given this explanation, which seems a very probable one, of what has happened to those saints who have meditated so long upon the crucifixion that they have got what they call stigmata, that is, marks of wounds corresponding to the wounds they were thinking about."<sup>1</sup> How are we to account for the tendency—which is undoubtedly a law of our nature—to assume a bodily state, attitude, or movement that we see enacted by another person? An infinite chain of

<sup>1</sup> Clifford's *Essays, Body and Mind.*

physical events might be conceived to have led up to the fit of grief or merriment which I see in another person; for that person may, for aught I know, be an automaton. But upon what mechanical principles can a physical impulse belonging to *that* chain be imparted to my body solely through the eye? The law of association, is the ready reply. But though the tendency referred to be a primary law (as I believe it to be), experience is wanting to establish the association. Supposing the experience to be hereditary, then have we to fall back upon mysteries, which are sterile arguments for any side.

It is waste of time, however, to dwell on platitudes like these, and yet the statement that our characters are unalterable amounts to this: Matter under special combinations becomes aware of its own behaviour; this behaviour is subject to the very same mechanical laws as rule the properties of matter not thus specially combined; the conviction that a totally different law comes into play with the new and totally different form of existence is (though also produced by the combination) illusory; the only ultimate reality is material force.

Speaking of the control of the feelings, Professor Bain says, "It is a fact too common to be questioned that we can restrain and regulate the course of our feelings in many ways." We can "put on a calm exterior while a fire is raging within. This is the most simple and direct mode of bringing the will to bear upon a state of mental excitement."<sup>1</sup> The feat is accomplished by controlling the voluntary muscles. Professor Bain here affirms that the power of the will is limited to "the circle of recognised voluntary muscles." "As regards then the command of the emotional states, the one thing clearly practicable is to check or further all that part of the diffusive manifestation made up of the movements of voluntary organs. . . . It is by such restraint that we are in the habit of suppressing pity, anger, fear, pride on many trifling occa-

<sup>1</sup> *The Emotions and the Will*, p. 361.

sious. If so, it is a fact that the suppression of the actual movements has a tendency to suppress the nervous currents that incite them, so that the internal quiescence follows the external. . . . It is a law of our constitution that the inward wave tends to die away by being refused the outward vent."

On the influence of volition he writes: "The custom of coercing the flow of ideas and the attitude of attention is an extremely valuable one, both for purposes purely intellectual and for the general government of the temper and feelings. We may consider it as belonging to the highest branch of self-discipline."<sup>1</sup> So, too, in his "Mental and Moral Science." "The will operates under the form of attention or mental concentration. . . . The power of the will over the trains of thought . . . may be considerable. We may not at once determine what thought shall arise, but of those that have arisen we can determine the attention upon some rather than upon others; the withdrawal of attention from any one will nullify its power of farther reproduction."<sup>2</sup>

Professor Bain notices the power of repetition in the formation of moral habits,—the conversion, as Mr. Spencer puts it, of voluntary to automatic acts; but he fully recognises a man's own share in the work when he says, "It is necessary above all things never to lose a battle. Every gain on the wrong side undoes the effect of several conquests on the right." In the same belief, George Eliot writes, "We prepare ourselves for sudden deeds by the reiterated choice of good or evil that gradually determines character."<sup>3</sup> "The character of me," says Clifford, "is what determines the character of the action; . . . within certain limits I have made myself."<sup>4</sup>

It is indisputable that acts depend mainly on character, and that character depends very largely on organisation; but, as I have just submitted, there is every reason to

<sup>1</sup> *The Emotions and the Will*, p. 379.

<sup>3</sup> *Romola*.

<sup>2</sup> *Ubi supra*, p. 158.

<sup>4</sup> *Essays*, vol. ii. p. 157.

believe that organisation itself is modifiable,—indirectly by conscious reflection upon its effects, and directly by either stimulating or starving the organs through the control we possess over the voluntary muscles. I know that the sight of certain objects will start a train of ideas whose sequence is ruled by the laws of association, and may be, consequently, beyond my control. But I have the power to shut my eyes or turn my head away: if so, I have power to start another train of thought.

Protesting against the doctrine that, a man's character is formed *for* him and not *by* him, and that "he has no power to alter it," John Mill says, "This is a grand error. He has, to a certain extent, a power to alter his character. . . . His character is formed by his circumstances (including among these his particular organisation); but his own desire to mould it in a particular way is one of those circumstances, and by no means one of the least influential." If those who contributed to the formation of our characters "could place us under the influence of certain circumstances, we, in like manner, can place ourselves under the influence of other circumstances."<sup>1</sup> The "can" is denied by the necessarian, who assures us this is a delusion. The placing of ourselves is, he thinks, the result of an *endless* chain of antecedents. Had "the position and movement of all the atoms in the universe" been known to him a million years ago, he would have been "in a position to derive from these, in accordance with the laws of mechanics," not only the "placing" in question, but "the whole past and future" of the world. To this I reply: The chain is not endless,—unless consciousness be a physical fact. Our own feelings in a great measure help to determine us, and our own feelings had an absolute beginning *as our* feelings. Our actions follow our feelings. There is here a sequence in time, as there is between a physical cause and its effect. But whereas, in the latter case, both cause and effect are modes of motion,

<sup>1</sup> *Logic*, vol. ii. p. 418.

in the former, one of the series, feeling, is not a motion. Beyond sequence in time there is no similarity. "Our character is formed by us as well as for us; but the wish which induces us to attempt to form it is formed for us; and how? Not, in general, by our organisation, nor wholly by our education, but by our experience—experience of the painful consequences of the character we previously had, or by some strong feeling of admiration or aspiration accidentally aroused."<sup>1</sup>

<sup>1</sup> J. S. Mill, *ubi supra*.

## LETTER XIV.

CONSIDERING the extensive influence of the late M. Cousin upon speculative opinion in France, it is curious how little he is studied amongst ourselves. Something of this may be due to his own mysticism; something to the strong realistic tendencies which have always characterised English thought; and something to the teaching of the school of which John Mill is the leading exponent. As a modern representative of the ontological method, one could hardly choose a better example than Cousin. And as our next task will be to examine the Necessary Truths upon which the Mentalists, as I have called them, found their speculations, it may be convenient to preface our remarks by a glance at Cousin's philosophy.

Cousin makes human reason his point of departure. He first inquires what are the elements of reason; or, as he explains it, what the fundamental ideas which "preside at its development." The condition of intelligence is difference: consciousness implies diversity. Unity, for instance, would be unmeaning but for the conception of variety. *E converso*, variety postulates unity. Two elements, therefore, are essential to human reason or intelligence. Two elements and their relation,—for one term owes its existence to the other—*l'un n'est qu'à condition que l'autre soit en même temps*. The relation, therefore, is that of cause and effect. The two representative terms under which all others may be brought are the finite and the infinite. These two assume various forms, or are variously expressed as unity and plurality, phenomenon and substance, absolute and relative, necessary cause and

contingent cause, &c., according to the subject-matter of the thought. Thus, if we think of space, we must conceive it as finite space, or else as the space of spaces, *i.e.*, infinite space. If we think of existence, it must be relative or absolute. If of external or internal phenomena, the thought implies being in itself, *i.e.*, substance; and so on. Now, all the first terms of these correlatives, viz., infinite, unity, substance, &c., are to be conceived also as cause—not relative, contingent, finite, but absolute cause.<sup>1</sup> If it were not so, the phenomenal world would not exist. But the world does exist as relative and as effect; therefore substance also exists as absolute and as cause. Again, absolute cause can only exist in relation to its effect, *i.e.*, the world. Hence the world is but the development and manifestation of the absolute, the perfect, the infinite,—fallen in developing itself into variety, imperfection, the finite.<sup>2</sup>

This savours somewhat of Pantheism, for which Cousin fervently prays his doctrine may not be mistaken. It certainly has the appearance (as he himself apprehends) *de tourmenter les abstractions*. It is the ontology of Descartes seasoned with a soupçon of Plato and Spinoza. Relatives prove the reality of their correlatives. Ideas prove the existence of their objects. Absolute existence passes into relative existence. Never has the subjective method been more boldly and thoroughly employed. Here is its culmination. The question whether ideas represent realities is not pertinent; the true question is as to the reality of things. “For ideas are not the reflections of things, but things are the reflection of ideas.”<sup>3</sup> Having

<sup>1</sup> “L’immensité ou l’unité de l’espace, l’éternité ou l’unité du temps, l’unité des nombres, l’unité de la perfection, l’idéal de toute beauté, l’infini, la substance, l’être en soi, l’absolu, c’est une cause aussi, non pas une cause relative, contingente, finie, mais une cause absolue.”—*Leçon iv.*

<sup>2</sup> “C’est la cause absolue qui absolument crée absolument se manifeste, et qui en se développant tombe dans la condition de tout développement, entre dans la variété, dans le fini, dans l’imparfait, et produit tout ce que vous voyez autour de vous.”—*Ibid.*

<sup>3</sup> *Leçon v.*

reached these heights, we are (exclaims Cousin) in the clouds : *nous avons perdu terre.*

But we may not yet descend. Ideas are but conceptions of reason,—and what is reason? Is it human? Is it yours? Compare it with what is yours,—the will, for instance. You can control the will. You can move your arm, or not, as you please. The will belongs to you. But can you alter your conception of a mathematical truth? Can you conceive two and two to make five? Not a bit of it. And so with all the truths of reason. You cannot conceive that two parallel lines will meet, nor that what is right is not obligatory. More than this, you know that what *you* are obliged to think true, all others are obliged to think true. The fact is, reason does not belong to you : *C'est qu'elle ne vous appartient pas.* Reason is not individual. It is not human. It is universal and absolute. Reason is infallible. It is not Reason that errs,—error is born of its relation with the senses; it is the imagination and the passions which lead it astray. Human reason is but a phase of eternal Reason—of Reason itself. Its elements are elements of a divine whole. This unity constitutes absolute Reason—Divine Intelligence. This unity, in short, is God.<sup>1</sup>

The summary of Cousin's philosophy may be thus expressed. The divine nature of reason is proved by its universality, its necessity, and its infallibility; and through its constituent elements we have an immediate intuition of God. This is the crowning pinnacle of transcendentalism, or rather of mysticism. Descartes' clear and distinct conceptions and Leibnitz's test of necessity and universality, which were adopted by Reid, Stewart, Hamilton, Whewell, and Mansel, all come to this. To use the words of a popular theologian, "These intuitions guarantee the truths which they reveal."<sup>2</sup>

<sup>1</sup> "L'unité de cette triplicité est seul réel. . . . Quelle est cette unité? L'intelligence divine elle-même. Voilà le Dieu trois fois saint que reconnaît et adore le genre humain," &c.—*Leçon v.*

<sup>2</sup> Cf. M'Cosh's *Method of Divine Government.*

If the *a priori* argument for belief in God rests on the validity of "necessary truths" generally, it is of the last importance to hear what can be said for or against them.

The Idealism of Berkeley brought forth the scepticism of Hume. The scepticism of Hume provoked not only the defence of Philosophy by Kant, but a like though quite independent attempt by Reid for the same purpose. Reid, who at one time had been an ardent disciple of Berkeley, took alarm at the consequences logically deduced by Hume from Idealism, and vainly set up his plea for common sense. This involved the theory of intuitive knowledge, and the appeal to consciousness as its guarantee. But there was nothing new in Reid's method. He simply reiterated the axiom of Leibnitz: "Experience informs us only of what *is* or *has been*, not of what *must be*." Dugald Stewart followed in the same track. But the writer who did most to familiarise English thinkers with the German ontologists was Coleridge. He too derived his impulse from the scepticism of Hume, or perhaps from the wider cause of the infidel philosophy of the eighteenth century.

Taking Kant as his leader, Coleridge draws a distinction between Reason and the Understanding. The latter he calls "the faculty of judging according to the sense." He thus illustrates the difference: If we analyse any given impression conveyed by sight or touch,—suppose, for instance, the iron of a turf-spade,—what is the result? The understanding compares its sides, and finds that any two measured as one are greater than the third; "and according to a law of the imagination, there arises a presumption that in all bodies of the same figures—that is, three-cornered and equilateral—the same proportion exists."<sup>1</sup> All subsequent observation confirms the fact; experience proves it to be true. "And there will exist no ground or analogy for anticipating an exception to a rule *generalised* from so vast a number of particular instances. So far

<sup>1</sup> *Aids to Reflection.*

and no further could the understanding carry us." "The reason supersedes the whole process, and on the first conception presented by the understanding in consequence of the first sight of a triangular figure, of whatever sort it might chance to be, it affirms with an assurance incapable of further increase, with a perfect certainty, that in all possible triangles any two of the enclosing lines will and must be greater than the third. In short, understanding in its highest form of experience remains commensurate with the experimental notices of the senses from which it is generalised. Reason, on the other hand, either *pre-determines* experience or avails itself of a past experience to supersede its necessity in all future time, and affirms truths which no sense could perceive, nor experiment verify, nor experience confirm."<sup>1</sup> The tenets of the intuitive theory could not be more felicitously expressed. Coleridge further asserts, "That there is an intuition or immediate beholding, a conviction of the necessity and universality of the truth so beholden, not derived from the senses; which intuition, when it is construed by pure sense, gives birth to the science of mathematics, and when applied to objects supersensuous is the organ of theology and philosophy." Elsewhere he describes metaphysics as "the science which determines what can and what cannot be known of being and the laws of being *a priori*; that is, those necessities of the mind or forms of thinking, which, though first revealed to us by experience, must yet have *pre-existed* in order to make experience itself possible, even as the eye must exist previous to any act of seeing, though by sight only can we know that we have eyes."<sup>2</sup>

This is a mere echo of Kant. With reference to the arbitrary distinction of the mind's powers, which Locke condemned as the making of "so many distinct agents in us,"—this is one of the great faults of the "Critique." The mental operations respectively ascribed by Kant, and

<sup>1</sup> *Aids to Reflection.*

<sup>2</sup> *The Friend*, vol. i. p. 309.

after him by Coleridge, to the understanding and to the reason, are both instances of what is commonly and correctly called reasoning. From something perceived or known the mind jumps to something else unperceived or unknown. It is quite correct to say that in certain cases there is "an assurance incapable of future increase;" but this is not due to any mysterious advantage that reason possesses over understanding. It is due to a very important law of the mind by which we are irresistibly impelled to project the judgment of the moment into the future,—to assume that what is will always be. Mr. Bain has named it the Law of Perseverance, and aptly compared it to the first law of motion. "Our first experiences are to us decisive; we go on under them to all lengths, being arrested only by some failure or contradiction."<sup>1</sup> The credulity of infancy and inexperience, as illustrative of this primitive tendency, is familiar to every one.

Sir W. Hamilton, though a sincere advocate of the introspective method, was not a thoroughgoing *a priori*ist. To be sure, he says, "What I cannot but think must be *a priori* or original to thought; it cannot be engendered by experience upon custom."<sup>2</sup> This statement occurs in a discussion on Space and Time, which he, like Kant, held to be fundamental conditions or forms of external and internal perception. He also maintained that geometry and arithmetic are *a priori* sciences. But he emphatically asserts, in opposition to Whewell, that the axioms of mechanics "are *educts* of experience."<sup>3</sup>

The opinions of Whewell on this head were far more consistent than those of Hamilton; and his distinguished position amongst recent thinkers, combined with the powerful support he gave to the *a priori* school, singled him out as a leader against whom the adverse party used mainly to direct their attacks. It matters little which

<sup>1</sup> *The Emotions and the Will*, p. 537.

<sup>2</sup> *Lectures*, vol. ii. p. 191.

<sup>3</sup> *Discussions*, p. 337.

of Whewell's philosophical works we open, equivalent expressions may be found in any of them. He firmly takes his stand on the axioms of mathematics. "The peculiar character of mathematical truth is that it is necessarily and inevitably true." He cannot suppose that any mathematician would hold that geometrical truths are learnt from experience. "We might ask such persons how experience can show not only that a thing *is*, but that it *must be*; by what authority she, the mere recorder of the actual occurrences of the past, pronounces upon all possible cases, though as yet to be tried hereafter only, or probably never; or, descending to particulars, when it is maintained that it is from experience alone that we know that two straight lines cannot enclose a space, we ask who ever made the trial, and how?"<sup>1</sup> This axiom, and the two others that magnitudes are equal which exactly fill the same space, and that two straight lines which cut one another cannot both be parallel to a third, clearly depend on our idea of space. "Thus we unfold out of the idea of space the propositions of geometry, which are plainly truths of the most rigorous necessity and universality."<sup>2</sup> According to Whewell, the notion of space itself is not obtained from experience. "Experience gives us information concerning things without us, but our apprehending them *as* without us takes for granted their existence in space." Quite so; but this may be only a question of priority. Assuming, for argument sake, that space has objective existence, it would necessarily be the very first of our experiences. The first movements of our limbs would make us acquainted with space, before we found out that it was occupied by "things without us."

Whewell asks, Who ever proved by trial that two straight lines cannot enclose a space? Sir John Herschel's reply to the same question respecting an axiom of mechanics was that, no one would dream of proving a

<sup>1</sup> *Thoughts on the Study of Mathematics.*

<sup>2</sup> *Philosophy of the Inductive Sciences*, vol. i. p. 71.

self-evident proposition, and of staking its truth on one additional attempt. "This would be as if a man should resolve to decide by experiment whether his eyes were useful by hermetically sealing himself up for half an hour in a metal case."<sup>1</sup> In his essay on Whewell, Herschel argues that such truths as these first principles of geometry are generalised from experience: "That they pervade all the objects of experience must ensure their continual suggestion by experience; that they are true must ensure that consistency of suggestion, that iteration of uncontradicted assertion which commands implicit assent and removes all occasion of exception; that they are simple and admit of no misunderstanding must secure their admission by every mind."

What further explanation is necessary, from the realistic point of view? What, in the face of such explanation, can justify the assumption that experience will not amply account for the whole attitude of the mind touching these necessary ideas? Inasmuch as they relate to the most obvious external facts, these facts, under the existing constitution of our minds, would necessarily teach them. And the degree of necessity with which we were compelled to recognise them would be exactly proportioned to their simplicity and to the frequency of their presentation. This is clearly shown by the different effects produced on us when contemplating two propositions both equally true, but one of which is obvious and familiar and the other recondite and strange. Objectively it is not more necessarily true that two and two make four than it is that the squares of the periodic times of the planets are to one another as the cubes of their distances. Yet our intuitive perception and early familiarity of the first has conferred upon its recognition a subjective necessity, while the discovery of the latter required a prodigious effort of the highest mathematical genius. To minds that fully apprehend Kepler's great

<sup>1</sup> *Essays.*

law, this also might become subjectively necessary no less than the relation between twice two and four. Indeed, Whewell has declared that the laws of definite proportions in chemical composition is a truth the negation of which is inconceivable; so that in his case it is pretty evident that the necessities of thought may be acquired by experience.

Mill's two chapters on "Necessary Truths," and the chapter on "Theories Concerning Axioms," practically exhaust the subject; although one of his later publications gave rise to some remarks from Mr. H. Spencer which we shall turn to presently. Mill's theory is that, "when it is affirmed that the conclusions of geometry are necessary truths, the necessity consists in reality only in this, that they necessarily follow from the suppositions from which they are deduced."<sup>1</sup> He also tells us, the definitions from which the conclusions of geometry are partly deduced are only hypothetically true. "There exist no real things exactly conformable to these definitions. There exist no points without magnitude; no lines without breadth, nor perfectly straight; no circles with all their radii exactly equal, nor squares with all their angles exactly right." Will it be said they are mentally true? No, returns Mill. Lines without breadth are inconceivable. Geometry is conversant with such lines, angles, and figures only as really exist, and these do but approximately correspond to the definitions. If this be so, "what is the ground of our belief in axioms,—what is the evidence on which they rest? I answer, they are experimental truths, generalisations from observation. The proposition two straight lines cannot enclose a space, . . . is an induction from the evidence of our senses."

The same doctrine was held by Dugald Stewart: "From what principles are the various properties of the circle derived but from the definition of a circle? and from what principle the properties of the parabola or ellipse

<sup>1</sup> *Logic*, vol. i. chap. v.

but from the definition of these curves? A similar observation may be extended to all the other theorems which the mathematician demonstrates."<sup>1</sup>

Locke was of a like opinion: "The mathematician considers the truth and properties belonging to a rectangle or circle only as they are in idea in his own mind; for it is possible he never found either of them existing mathematically, that is, precisely true in his life. . . . All the discourses of the mathematicians about the squaring of a circle, conic sections, or any other part of mathematics, concern not the existence of any of those figures; but their demonstrations, *which depend on their ideas, are the same whether there be any circle in the world or no.*"

Whately says: "It has been rightly remarked by D. Stewart that mathematical propositions are not properly true or false, in the same sense as any proposition respecting real fact is so called; and hence the truth, such as it is, of such propositions is necessary and eternal, since it amounts only to this, that any complex notion which you have *arbitrarily* formed must be exactly conformable to itself."

Many others might be cited to the same effect. Notwithstanding these great names, I cannot go the length of thinking that geometrical truths are merely truths by courtesy, *i.e.*, that they depend on definitions which are only hypothetically accurate. Most assuredly the axioms are not arbitrary (this Mill cordially assents to), but are true, whether approximately or not, because they conform to actual relations of space. Were it not so, we could neither navigate the globe nor predict the return of a comet. Some confusion arises, I think, from treating definitions as axioms, and making the conclusions of geometry depend on the former. Of course, no truth can be derived from a mere definition except the meaning of words. When we say parallel planes are such as never meet, though indefinitely produced, the proposition is barren; it

<sup>1</sup> *Works*, vol. ii. p. 41.

conveys nothing beyond the meaning of the word "parallel." But when we say two straight lines which intersect each other cannot both of them be parallel to a third straight line, this is no definition, but an axiom, which, however self-evident, is absolutely true of a corresponding fact, and may be made the basis of conclusions which are demonstrably accurate.

Nor can I admit the justice of the implication that because there are no lines without breadth, the lines which do exist afford but partially accurate data for geometrical calculations. A straight line, in the geometrical sense, is nothing but length of distance in a uniform direction; and the length of the distance between the sun and the earth, if measured in a uniform direction, gives us the notion of length without breadth, and perfect straightness. Decide this as we may, it is but a collateral matter, and in no wise affects the question whether these axioms are derived from experience, the denial or admission of which depends upon certain transcendental doctrines, whose merits have yet to be estimated by the aid of Kant: before we can decide whether experience is the ultimate source of what is universally accepted as truth, we have to investigate the question: How experience itself is possible. But we have not yet done with the Empiricists.

Stress is always laid by the Mentalists on the inadequacy of experience to explain certainty beyond it. This certainty, say the others, is fully accounted for by an innate propensity to generalise all first experiences. Mill has provided another and a plausible explanation of this assurance with respect to the axioms of geometry. The properties of geometrical forms are capable "of being painted in the imagination with a distinctness equal to reality, in other words, the exact resemblance of our ideas of form to the sensations which suggest them. This, in the first place, enables us to make (at least with a little practice) mental pictures of all possible combinations of lines and angles, which resemble the realities quite as well as any which we could make on paper; and in the

next place, make those pictures just as fit subjects of geometrical experimentation as the realities themselves." So that, whether the images were mental or not, "the foundations of geometry would be laid in direct experience."

Having argued that the definitions of geometry are but hypothetically true, and that the axioms are experimental, not *a priori* truths, Mill goes on to show that the truths of arithmetic are also inductions from experience; and, as in the case of other demonstrative sciences, are only necessary truths in that they necessarily follow from first principles, which in turn are "not absolute, but only conditional truths." The axioms of the calculus—the sums of equals are equal, &c.—are absolutely true of numbers, or of the algebraic symbols which stand for numbers, and they would be true of all objects whatever *if* the first principles of arithmetic—such as one and one are two, &c.—were true of all objects whatsoever. This, however, is not the case. "In all propositions concerning numbers a condition is implied without which none of them would be true, and that condition is an assumption which may be false. The condition is that  $1 = 1$ ; that all the numbers are numbers of the same or equal units. Let this be doubtful, and not one of the propositions will hold true."<sup>1</sup> No two pounds, no two minutes, no two inches, no two of anything are equal. In number only is  $1 = 1$ . "And where the mere number of objects, or of the parts of an object, without supposing them to be equivalent in any other respect, is all that is material, the conclusions of arithmetic, so far as they go, to that extent alone are true without mixture of hypothesis." Only, therefore, in the few cases, such as the census of a country, for instance, is the result of a calculation absolutely true. When we talk of miles, accuracy is at an end. In a flock of sheep, no two are of the same intrinsic worth. Two hostile armies may have exactly the same number of men, horses, and guns, but their strength cannot be measured by arithmetic.

<sup>1</sup> *Logic*, vol. i. p. 291.

## LETTER XV.

THE adverse arguments may be tabulated as follows:—

<i>A Priori or Introspective Doctrinc.</i>	<i>Psychological or Analytical Doctrinc.</i>
1. Reason predetermines experience. Certain ideas are primary truths of consciousness.	1. Experience determines reason. The so-called primary truths are generalisations from experience.
2. The negation of these truths is impossible. They are necessary.	2. Whenever negation is impossible, subjective necessity cannot be denied. But,
3. This necessity applies to all minds. The truths are universal.	3. The necessity is not always insuperable. Hence the criterion cannot be relied upon.
4. The necessity is not derived from experience. This is proved by introspection.	4. The subjective necessity is derived from experience. Proved by the analytical method.
5. The necessity is valid for noumenal being as well as for phenomenal.	5. Of noumena, or things in themselves, we can know nothing.

If, says the *a priorist*, the negation of a proposition is inconceivable, that proposition is necessarily true. Granted, says his opponent,—necessarily true for you. What then? Are the relations of things ruled by the limits of thought? What proof can you offer that they are necessities for other minds as well as yours? What proof that they are permanent necessities for any one? Nay, what proof, if the necessity were insuperable for all, that they are original data of consciousness, and not explicable by the known laws of association?

In the hands of the analytical school, the law of Inseparable Association is a formidable weapon. It deals with the test of inconceivability as summarily as the Law of Perseverance deals with the predictive certainty of

reason. "Where two or more ideas have been often repeated together, and the association has become very strong, they sometimes spring up in such close combination as not to be distinguishable. Some cases of sensation are analogous. . . . Ideas, also, which have been so often conjoined that, whenever one exists in the mind, the others immediately exist along with it, seem to run into one another, to coalesce, as it were, and out of many to form one idea; which idea, however in reality complex, appears to be no less simple than any one of those of which it is compounded. . . . It is to this great law of association that we trace the formation of our ideas of what we call external objects—that is, the ideas of a certain number of sensations received together so frequently that they coalesce, as it were, and are spoken of under the idea of unity. Hence what we call the idea of a tree, the idea of a stone, the idea of a horse, the idea of a man. . . . Some ideas are by frequency and strength of association so closely combined that they cannot be separated. If one exists, the other exists along with it, in spite of whatever effort we may make to disjoin them. For example, it is not in our power to think of colour without thinking of extension, or of solidity without figure. We have seen colour constantly, in combination with extension, spread, as it were, upon a surface. We have never seen it except in this connection. Colour and extension have been invariably conjoined. The idea of colour, therefore, uniformly comes into the mind, bringing that of extension along with it; and so close is the association, that it is not in our power to dissolve it."<sup>1</sup>

The law of Obliviscence, which John Mill was the first to give a name to, supplements, or rather comes under, the law here elucidated by his father. "It is one of the principal laws of obliviscence that when a number of ideas suggest one another by association with such certainty and rapidity as to coalesce together in a group, all

<sup>1</sup> James Mill, *Analysis of the Human Mind*, vol. i. p. 68 ff.

those members of the group which remain long without being attended to have a tendency to drop out of consciousness." <sup>1</sup> For instance, the laborious process of learning to read; what once cost us so much pains we become at last unconscious of.

The law of inseparable association and the law of obliviscence would explain many of our "inabilities to think and inabilities not to think" without the aid of any other hypothesis. And seeing that the so-called necessary truths, which the mind itself is supposed to formulate, are engendered so early, and relate to such obtrusive facts, it is impossible to show (say the sensationalists) that these laws do not explain them.

Misunderstanding and dispute have arisen from the use of the term "inconceivable." If "inconceivable" mean that a proposition is false because I cannot *believe* it to be true, or that it is true because I cannot *believe* it to be false, the test of conceivability is worthless. If it mean that a proposition is false because *I* cannot conceive it to be true, but can conceive a state of things in which it might be true, and the reverse of this, the test, if not worthless, is at least merely provisional and hypothetical. If it mean that a proposition is false because it is *nonsensical*, and that it is true because its contradictory is nonsensical, then and then only is the test absolutely valid.

Under such limitation as this the test of conceivability would not appear to be worth much. Yet G. Lewes and Mr. Spencer, both stanch foes of the introspective and ontological school, maintain that what is inconceivable to *us* is, *ipso facto*, a criterion of objective truth. Were it not that Lewes himself professes to support Mr. H. Spencer, one would hesitate to ascribe the same opinions to both; for while Lewes repeatedly affirms that all knowledge and every test are alike relative, and holds that "the existence of an external world cannot be proved

<sup>1</sup> *Examination of Sir W. Hamilton's Philosophy*, p. 250.

if the highest degree of probability is rejected as insufficient,"<sup>1</sup> Mr. Spencer, though admitting "that conceivable-ness depends on experience, and that hence in respect of all things beyond the measure of our faculties it must ever remain an inapplicable test,"<sup>2</sup> still says, "We have found the current belief in objects as external independent entities has a higher guarantee than any other belief whatever—that our cognition of existence *considered as noumenal* has a certainty which no cognition of existence considered as phenomenal can approach."<sup>3</sup>

Allowing the doctrine of the two thinkers to be essentially equivalent, as I understand them, it amounts to this: Indestructible beliefs—subjectively necessary truths—are those the negation of which is inconceivable. They are generalisations from experience, which rest ultimately upon the testimony of consciousness:—the hereditary transmission of organised experience forming part of this doctrine. The ultimate test of all truth being consciousness, beliefs guaranteed by this test are infallibly true, so far as consciousness is infallible.

But, adds Lewes, "consciousness is only infallible in verdicts limited to identical propositions."<sup>4</sup> And, according to Mr. Spencer, "A great portion of men are incapable of interpreting consciousness in any but its simplest modes, and even the remainder are liable to mistake for dicta of consciousness what prove, on closer examination, not to be its dicta."<sup>5</sup> Nevertheless the fact that conceivability is determined by an appeal to consciousness, and the further fact that "thought is determined by objective conditions," make the test practically valid; and beliefs, the negation of which is inconceivable to *us*, are true in the sense that the order of ideas corresponds to the phenomena, "so that the one becomes a reflection of the other, the movement of thought following the movement of things."<sup>6</sup>

<sup>1</sup> *History of Philosophy*, lxvi.

<sup>2</sup> *Principles of Psychology*, vol. i. p. 26.

<sup>4</sup> *Ubi supra*, lxi.

<sup>5</sup> *Fortnightly Review*, No. V.

<sup>3</sup> *Ibid.*, p. 59.

<sup>6</sup> Lewes.

Notwithstanding that "men may mistake for necessary certain beliefs which are not necessary," it "may yet remain true that there are necessary beliefs, and that the necessity of such beliefs is our warrant for them."<sup>1</sup>

It is strange that so astute a thinker as Lewes, when alluding to this controversy between himself and Mr. Spencer, on the one side, and John Mill, on the other, should think, "there can be little real opposition between us, in spite of some differences of language." Between Mill and Mr. Spencer the difference is as wide as it can be, though much less wide in the case of Lewes himself. Mill dissents *toto cœlo* from Mr. Spencer's doctrine that "the necessity of such beliefs is our warrant for them," and this on the score of two objections: 1. That the dispute as to the test of necessity itself disproves the validity of the test; 2. If "conceivableness depends on experience," the ultimate test is not necessity of thought, but experience. To this Lewes replies: Uniformity of experience is not to be adduced as a test, unless this uniformity is guaranteed by the unthinkableness of its negation,<sup>2</sup> which looks very like proving the necessity from uniformity of experience, and the uniformity from the necessity. The circle is complete. To the other objection Mr. Spencer answers: The dispute does not destroy the test; it only proves that "there is a liability to overlook what are necessary connections in our thoughts, and to assume as necessary others which are not." He takes the case of an arithmetical blunder: supposing a boy to make the addition of 35 and 9 to amount to 46. "Now, without discussing the mental act through which we know that 35 and 9 are 44, and through which we recognise the necessity of this relation, it is clear that the boy's misinterpretation of consciousness, leading him tacitly to deny this necessity by asserting that 35 and 9 are 46, cannot be held to prove that the relation is not necessary." Certainly not. But is not the conclusion irrelevant? It proves what was not

<sup>1</sup> Mr. Spencer.

<sup>2</sup> *Ibid.*, lxix.

denied. The question is not concerning the *relation* of things, but whether the so-called necessary connections of thought are proofs of a corresponding order of things. Mr. Spencer bases his plea for the criterion of conceivability on the fact that, in all demonstrative reasoning, each step is verified by an appeal to reason. Granting this, still if like the schoolboy, we mistake, or are liable to mistake, for dicta of consciousness what are not such—if we mistake false inferences for intuitive perception, how are we to know when we have made the blunder? This difficulty utterly destroys the value of the criterion. Genuine necessity of thought, when we really come at it, may correspond with the order of phenomena. The point is, how are we to know when the necessity is genuine? The test needs testing. Both Lewes and Mr. Spencer freely admit that, we “occasionally think we have the warrant when we have it not.” What, then, is the worth of this Protean test which is always playing us such slippery tricks? The answer is, “The *only* thing shown is the need for verification of data and criticism of the acts of consciousness.”<sup>1</sup> The only real test, therefore, is experience. But while the test of necessity must clearly be *nil* for those who are not constrained by it, for those who are, further proof is superfluous, since whether the proposition be true or not they feel themselves compelled to believe it.

Every judgment the denial of which involves a contradiction is necessarily true. Unless its denial involves a contradiction it is not necessarily true. The consequence is, the only necessarily true judgments are identical propositions or analytical judgments, all of which may be reduced to identical propositions. That  $A = A$  is necessarily true, because the opposite is self-contradictory. The analytical judgments—the whole is greater than its part; all islands are surrounded by water, &c.—are necessarily true, because they may be resolved into identical propositions or definitions. It is clear, however, that no addition

<sup>1</sup> *Fortnightly Review*.

can be made to our knowledge by the assurance that a thing is what it is. Everything is what it is. But how are we to know what the particular thing in question is? *Is it what we take it for?* That's the problem. An appeal to consciousness must always be met by the argument of the idealist. Lewes, while allowing this, meets the objection by saying: "To reach the truth we have no need for deeper knowledge, since truth is simply *correspondence* between the internal and external orders." This tells us what *relative* truth is, but does not help us the least in proving the correspondence. It is easy to agree with Lewes as to the wisdom of contenting ourselves with relative truth. That is quite another matter. But I for one totally disagree with Mr. Spencer as to the infallibility of consciousness respecting the independent and noumenal existence of external objects and their primary qualities.

## LETTER XVI.

THE present course of letters is devoted to an investigation of the ontological and cosmological arguments for the existence of a God. The ontological, as was stated, rests upon the data of consciousness. It is intuitive, or immediately deduced from intuitions primarily furnished by the working of our internal faculties. The cosmological proof rests partly upon experience, and partly upon the transcendental conception of a necessary cause outside the contingent world. An outline was roughly sketched of the two great schools of philosophy—the Mentalists and the Sensationalists. The former were said to uphold the doctrine of necessary and universal truths; amongst which is to be found the idea of God. The latter were seen to derive this idea from sense experience. This diversity of opinion soon resolved itself into a dispute upon the nature and limit of knowledge generally; which in turn must always come to the fundamental question of philosophy—the origin of knowledge generally.

Locke was taken as representing the empirical or *a posteriori* thinkers; and, upon analysing his views, it became apparent that what at first seemed so simple and so obviously true, was both complex and contradictory. It turned out that our first ideas or thoughts could not be satisfactorily accounted for by mere sensation. Indeed, sensation, as implying an external cause of it, seemed to be the problem first needing solution. Hence we inclined to the belief that Descartes and Leibnitz were right in positing some measure of *a priori* contribution by the mind itself, without which experience would not be feasible. It also

appeared that Locke's theory is defective, because it starts on the false assumption of Realism that, mind and matter are distinct and independent entities, whose connection is to be explained upon mechanical principles. It was contended that the dualistic hypothesis inevitably leads to contradiction; in illustration whereof we noted various notions concerning mind and matter, each of which proved more or less untenable. From this we passed to a discussion on matter and force; and the outcome was again clearly antagonistic to Realism, Dualism, and Materialism. In the somewhat superficial and elementary digest of the Kantian philosophy now to be set before you, it will not be urged because one extreme is to be avoided that this is any justification for rushing into the other.

The position occupied by Kant in the history of thought is not so easy to define as his enthusiastic disciples would have us believe. His power and subtlety as a thinker were prodigious. And there is no gainsaying the fact that, the whole tone of the nineteenth century philosophy bears an unmistakable stamp of Kantian metaphysic. There is not a thinker of note since Kant whose opinions would be what they are had the "Critique of Pure Reason" never been written. No evidence can more clearly testify to this than the interest in Kant's great work which everywhere shows such marked signs of revival. Within the last ten or fifteen years the "Critique" has given rise to a literature of its own; and almost every year now brings forth some new analysis or exposition of it in France, Germany, and even in England.

The significance of this fact is not to be mistaken. The critical philosophy was followed in Germany by the absolute Idealism of Fichte, and the "Identity of Contradictories" of Hegel. For practical purposes these systems were not worth much. The world never could, nor ever will, make much of them. And the reaction which always treads on the heels of extremes found its expres-

sion in the Positivism of Auguste Comte. Concurrent with this ultimatum of speculative wisdom was an advance in physical discoveries such as never before had been witnessed. The whole energies of the civilised world were concentrated upon applying those discoveries to the animal and social exigencies of mankind. Philosophy, and with it religion (for the spirit of criticism was a worm at the root of all the creeds) had to make way for politics and trade. Freedom and wealth were not only the first, (which they are always likely to be), but the sole objects worthy of pursuit.

The rapid progress of science was not, however, productive of unmixed good. Emboldened by her splendid victories, she began to usurp a sort of dictatorship over the minds of the gaping multitudes. Not infrequently she departed from her own legitimate sphere to dogmatise where her teaching was worse than nescience. Physicists of the highest eminence, whose lives had been given up to the exclusive study of some special department of nature,—a necessary consequence, by the way, of ever-increasing knowledge,—learnt to see all things through the distorting medium of their own speciality. The habit of seeking, and finding, a path out of all difficulties by experimental processes led them to employ the same means where these cease to be applicable. To collect facts by observation, to record and describe these facts, to discover their relations by analysis, and to call these relations the laws of Nature, are the principles which constitute the scientific method. The ancient theory of evolution, supported and verified by the accurate modern modes of proving the indestructibility of matter and the correlation of the physical forces, and the development of species, were all thrown into one scale. The mechanical explanation of the universe and of man's relation to it was the only theory fit for a rational and an educated being.

However substantial the benefits which many of the

results of science undoubtedly conferred, this great theoretical result — Materialism — had very little tendency to alleviate the misery which either does or does not originate with animal wants ; while, on the other hand, wherever this misery exists, it is certain that Materialism tends to annihilate the faith which in most cases is its sole relief.

This, then, accounts for our return to the critical philosophy of Kant. The present modes of thought are found inadequate to the perennial needs of human nature. Questionings always have been, and always will be, muttered which cannot be answered in terms of force or motion ; and the attempt which is now constantly being made to find answers in such terms, palpably brings science into trouble without bringing her votaries out of it. In these straits it has occurred to many that the need at present is not what is usually meant by increase of knowledge, (the increase being already in excess of our cramming powers), but a return once more to an investigation of the nature and limits of the knowledge we possess, or are likely to possess ; and thus to ascertain what authority any one may have to pooh-pooh creeds and cravings which, when all is said and done, are about the vilest part of a man.

When, therefore, the questions are put, Whereby did Kant advance the previous boundaries of philosophy ; what new regions of speculation did he conquer ; can it be affirmed that he made any donations to the funded thought of the world to compare with the legacies of the great thinkers whom we have already noticed ;—anything, for instance, to match Descartes' physiological explanation of thought and feeling, which has now become a commonplace ; or with Locke's application of the inductive and analytical method to mental science ; or with Berkeley's theory of vision as a psychological basis of Relativism ; or, finally, with Hume's doctrine of causation, which crowns all with scepticism ?—the fairest and most

appropriate answer is to be found in the purpose which has incited this return to his doctrines. When our survey of these is accomplished, it will, I think, be evident that the question of Kant's merit rests entirely upon his treatment of the ultimate problems of philosophy—the origin, the nature, and, above all, the limit of human knowledge.

We may now set to work upon the "Critique," certainly not with the ambition to master it, but at all events to get such an acquaintance with its leading principles as will stand us in good stead whenever philosophy and metaphysics are to the fore.

Many a hard book would be easy if we understood at the outset what the author wanted to tell us. This may be a platitude; but who has not read a book through before he discovered what the author was driving at, and failed, maybe, to find it out even then? The "Critique" is hard reading, because the subject-matter is hard, and because Kant, though many years in thinking, was but a few months in writing it. Still, barring some inconsistencies which are not to be overcome, the work is intelligible enough when we comprehend Kant's aim, and have taken the pains to master his unhappy terminology. These two points must at any rate be made sure of. There will be the less difficulty about the former in that Kant himself is very explicit as to his purpose.

Kant was startled and alarmed by Hume's theory of causation. He saw at a glance its worst consequences to philosophy, morality, and religion. Philosophy was brought to a dead-lock; knowledge was impossible; moral freedom a delusion; and religious belief a fantasy. Nought remained but "*Überdruss und gänzlicher Indifferentismus, die Mutter des Chaos und der Nacht*"—weariness of spirit and utter supineness, the mother of chaos and of night. Between Kant and Hume there was this essential difference: Kant had an eye to consequences—moral consequences. Hume left these to take care of themselves.

With Kant, the practical interests of humanity were paramount. These interests, as he thought, require the assumption of God, freedom, and immortality. What was to be done? He must at once vindicate reason, and prescribe its bounds. He must avoid Sensationalism, which being granted, could have no other issue than Hume's; and yet contrive to escape crude Idealism, which, however alluring, was not a whit less destructive. If it was Locke's fallacy to *sensualise* the conceptions of the understanding, it was equally fallacious on the part of Leibnitz to *intellectualise* phenomena. If all knowledge were, as Leibnitz believed, purely analytical—if it were no more than the unfolding of conceptions created by the activity of the mind itself, no addition to knowledge would be possible, and, for anything we could tell, the whole of our experience might be an illusion. If distinct and clear ideas guaranteed corresponding existence, as Descartes maintained, the clear idea of a hundred dollars would be as good as gold. If we can know nothing but our own states of consciousness, if we perceive nothing "besides our own ideas or sensations," Berkeley's reference to God to account for these was no better than Locke's reference to matter for the same purpose.

Is knowledge possible? If it is, how is it possible? We are quite familiar now with the difficulty of answering this puzzling question: how, as Hume asks, "a single perception" can "produce the idea of a double existence?" Kant thought it "a scandal to philosophy and to the general human reason to be obliged to assume as an article of mere belief the existence of things external to ourselves." But did he silence the scandal? This is what we have to look into. He tried to do so; and he had a notion that in this dispute, as in many others, though both sides were wrong, there was still something to be said in favour of both; that the probability was there might be some mistake as to what ought to be the bone of contention. If the one point to be considered is, how is

knowledge possible? surely the proper way to deal with it is, not to take our knowledge to pieces, and then put it together again, for this must in every case ignore the real difficulty, and is like looking for the spectacles which one has upon one's nose; but to take the mind to pieces, so to speak, and ascertain once for all, if possible, what belongs strictly to the intellect itself. In this way we might perhaps get some sort of notion of what also belongs to the world outside it. Here we have Kant's great aim. "It is my task to answer the question how far reason can go without the material presented and the aid furnished by experience." The "Critique" is a critical investigation of the faculty of pure reason. Its first object is to draw a line between the *a priori* and *a posteriori* elements of knowledge. No one before Kant had thought of attempting this division categorically; and it was Hume who suggested to him the guiding principle of his efforts. "It was Hume," says he, "who gave quite a new direction to my researches in the field of speculative philosophy. I did not regard his inferences, for I knew he had drawn them, because he had not represented to himself the whole of his problem, but a part only. . . . I therefore tried whether Hume's notion had not a far more extensive application; and soon found that the concept of cause and effect is by no means the only one in which the mind has *a priori* conceptions of the connection of things, and that such *a priori* conceptions are not confined to metaphysics. I next endeavoured to ascertain their number; and as this succeeded with me, I soon felt certain that they are not, as Hume is of opinion, derived from experience, but have their origin in the pure intellect."

Hume's point was that, the only fact *given* in causation is *change*. One event follows another. As to any causal nexus, any tie which necessitates the sequence, we know nothing of it. Nevertheless, we have the feeling that the connection is a necessary one, and *must* always occur under similar conditions. This has to be accounted for.

Hume declared there was nothing in it but the force of habit; but, said Kant, a single instance produces as strong a feeling of certainty about recurrences as a million repetitions of it would. A single instance is not a habit. Indeed Hume himself admits, "There can be no demonstrative argument to prove that those instances of which we have had no experiences resemble those of which we have had experience."<sup>1</sup> Besides, there is something more in the case than mere expectation of sequence. We feel there is much more than this when a magnet on one side of glass moves a needle on the other side. And if this remarkable feeling is there, and experience will not account for it, there is but one alternative: it must be an *a priori* element of intelligence.

When he came to look about him, Kant found a whole class of mental facts of a precisely similar character. Hume had not gone far enough. His notion was susceptible of a much more extensive application. The task, therefore, now shaped itself into the classification of judgments of a like nature. Kant talks of ascertaining their number. Obviously it was out of the question to make an inventory of the judgments themselves. The only thing to be done was to find out what kinds of judgments, and how many kinds there are, which bear the peculiar stamp of necessity and universality. Kant adopted Leibnitz's test of *a priority*. But neither to Leibnitz nor to any one else had it occurred to define and classify the subjective conditions of experience. This, then, was Kant's object, and by its failure or success he must stand or fall.

When it is asked, What is the real value of the result? at present we must content ourselves with Kant's prefatory reply: "A cursory view of the present work will lead to the supposition that its use is merely *negative*; that it only serves to warn us against venturing with speculative reason beyond the limits of experience, this

<sup>1</sup> *A Treatise*, &c., part iii. § 6.

is, in fact, its primary use." But inasmuch as speculative reason threatens to usurp the whole realm of thought, instead of keeping to the limits of sensibility, which is its proper sphere, the criticism which shall define these limits, and by so doing prevent interference with the exercise of *pure* reason, assumes a *positive* value. This indicates the relation of the critical principles to God, freedom, and immortality. But although this distinction between *speculative* and *pure* reason (which alas! some are profane enough to think arbitrary) seems to hold out brilliant prospects to us, although too we might suppose that, if we can, as Kant believes, overstep the bounds of experience by virtue of our *a priori* faculties in one direction we may hope to do so in another, we must not be too sanguine. Kant is the last person to lead us into delusive expectations, and I am afraid that, by his own showing, the claims he puts forth for "pure" reason must fall under the scythe of his own "Critique." In spite of this failure, the "Critique" has a positive value, and this consists in his having shown—what has already been shown in our criticism, all of which may be traced to Kant—that Sensationalism will not explain the possibility of knowledge *because* it takes no heed of certain conditions by which alone knowledge or experience is possible. Locke had declared the mind to be a *tabula rasa*. Yes, said Kant, but a *tabula* upon which certain characters only can be written; and of what kind I now undertake to show you.

## LETTER XVII.

BEFORE attempting to account for the subjective elements of thought common to all intelligence, Kant naturally endeavours to establish the fact that such *a priori* conditions do exist. He appeals to the criteria of Leibnitz: "Necessity and strict universality," he repeats, "are infallible tests for distinguishing pure from empirical knowledge, and are inseparably connected with each other."<sup>1</sup> "Every change must have a cause" is an instance in point. But the mere existence of such a science as pure mathematics, which proceeds on the assumption that its axioms are necessarily true, sufficiently proves that we have judgments that are necessary.

He now makes his first essay in classification. He divides all judgments into analytical and synthetical. The former merely unfold or analyse what is already contained in a conception. The latter add something to it. "For example, when I say all bodies are extended, this is an analytical judgment." The idea *extension* is contained in the idea—*body*. On the other hand, when I say all bodies are heavy, I add something to the conception of body not involved in it. By the addition my judgment becomes synthetical. The distinction being drawn between what Locke calls "a trifling proposition" and one that "conveys with it instructive real knowledge," Kant next addresses himself to the question "How are synthetical judgments *a priori* possible?" This is only another way of stating his grand problem, "how far reason can go without the material presented and the aid furnished by experiences."

<sup>1</sup> Page 3. Tr. refers to Meiklejohn's translation of the "Kritik."

The least reflection will teach us that we must at once turn to the origin of knowledge. Here we must be very careful to master Kant's terms. "That all our knowledge begins with experience there can be no doubt." "In whatsoever mode or by whatsoever means our knowledge may relate to objects, it is at least quite clear that the only manner in which it immediately relates to them is by an intuition:" by a perception we might almost say. The word "intuition" is important as pointing to the sense element, which he here declares to be essential to knowledge. "But it by no means follows that all arises out of experience, for, on the contrary, it is quite possible that our empirical knowledge is a compound of that which we receive through impressions and that which the faculty of cognition supplies from itself (sensuous impressions giving merely the *occasion*)." "By means of sensibility, therefore, objects are given to us, and it alone furnishes us with intuitions; by the understanding they are *thought*, and from it arises conceptions. But all thought must directly or indirectly, by means of certain signs, relate ultimately to intuitions, consequently with us to sensibility, because in no other way can an object be given to us." In this last quotation we have Kant's theory of knowing in a nutshell. Every sentence must be carefully considered if we would escape bewilderment when we come to the unfolding of his system. Sensibility, you observe, gives us intuitions of objects: the understanding converts these intuitions into thoughts: and out of thoughts we get conceptions.

I may hint to you at once that Kant's dualism is one of the insolvable mysteries of the "Critique." The above sentences, and those I am about to quote, would seem to make his dualism as clear as Locke's. Ere long his Idealism will appear almost identical with Berkeley's.<sup>1</sup> There

<sup>1</sup> Kant charged the Idealism of Berkeley with making experience "nothing but illusion." "Berkeley," said he, "considered space a mere empirical representation, known to us, with all its determinations, like

could be no mistake, one would think, about Kant's use of the word "object" when, for instance, he describes sensation as "the effect of an object upon our faculty of representation." Yet nothing can be more delusive than the use of this word here. According to Kant, objects are no more given as ready-made objects than conceptions are. They only become objects after undergoing mental manipulation. What *is* given as the ultimate ground of sensation is *phenomenon*. "That sort of intuition which relates to an object by means of a sensation is called an empirical intuition. The undetermined object of an empirical intuition is called *phenomenon*." The meaning of "undetermined" is just what I have described as the ultimate ground of sensation, and is something or other as yet undetermined, unmanipulated, untreated by mind. Phenomenon, therefore, *in the sense here used by Kant*, must stand for what we neither know, nor can ever know, anything about. But if the ultimate cause, or occasion, let us say, of sensation is something we never can know anything about, how can we predicate existence of it? This at once suggests Idealism and scepticism as absolute as Hume's. But we must not get out of our depth before we have learnt to swim.

The next sentences are of vital importance. "That which in the phenomenon corresponds to the sensation I

the phenomena in it, only by means of experience or perception. I show, on the contrary, that space (and time, which Berkeley overlooked), with all their determinations, are known *a priori* as the pure form of our sensibility." Yet what does the difference come to? Berkeley held that space, "like the phenomena in it," was nothing apart from mind perceiving it. Kant says this very fact, pure subjectivity, makes space a reality. Space has no affinity with phenomena, which are the assumed appearances of a hypothetical substance; it is not an "appearance" of anything different from itself; it is "the pure form of sensibility;" it is the condition under

which all phenomena are intuited. But this proof of reality, this escape from illusion, is only effected by saying, space is as real as the mind which apprehends it, and this is precisely what Berkeley says. The weakness of Berkeley's argument is, that the permanent mind is proved by the existence of that which he, Berkeley, denies. The weakness of Kant's position is that, if space is *nothing but* a form of sensibility, neither it, nor the phenomena in it, are anything apart from mind perceiving it. The reality, as in Berkeley's case, depends on the mind, but this in turn, as in Berkeley's case, depends on its perceptions.

term its *matter*; but that which effects that the content of the phenomenon can be arranged under certain relations, I call its *form*." Note well this distinction. It is the basis of the whole "Critique." It draws the line between subject and object. If we know all the *forms* of thought, our end is accomplished. We have got at the conditions necessary to all thinking, and we have discovered how *a priori* synthetical judgments are possible.

The advantage of having critically examined Locke now becomes apparent. Throughout that criticism the one defect insisted upon was, that Locke omitted to show, or even to heed the necessity of showing, how the arrangement of these "certain relations" was brought about; how the relations of likeness and unlikeness are established; how Mr. Spencer's "automatic classification" is effected; how, in a word, sensation is converted into perception. Clearly, "that in which our sensations are merely arranged, and by which they are susceptible of assuming a certain form, cannot be itself sensation. It is, then, the matter of all phenomena that is given to us *a posteriori*; the form must be ready *a priori* for them in the mind, and consequently can be regarded separately from all sensation."<sup>1</sup>

Pursuing his system of classification, Kant divides his forms into two kinds: forms of intuition and forms of thought. The first are the most comprehensive, because, if all thinking is referrible to intuitions, whatever is common to these is common to the other. Now, let us ask ourselves what there is which enters into every perception or thought conceivable to the human mind. Two elements are inseparable from every mental fact, whatever name we

<sup>1</sup> "He concluded that there were two cognitive faculties totally distinct and differing *in kind*, sensibility and understanding. This position is the basis of the whole critical philosophy. . . . We shall see that sensibility is a *receptivity* in some respects passive, and understanding an *active spontaneity*."—*J. P. Mahaffy, Kant's Critical Philo-*

*sophy*, vol. i. p. 33.) To speak of two cognitive faculties, reminds us a little too much of Locke's sensation and reflection. Mr. Mahaffy rightly lays stress upon Kant's design to vindicate the "mind itself" of Leibnitz; but doubts whether "we should designate them both under the same name of faculty."

choose to give it. These two are Space and Time. Space and Time, therefore, are Kant's FORMS OF INTUITION. Here are the primary conditions of experience. Never was there a bolder (some will say a more audacious) stroke of genius than to make these conditions not external but internal, not objective but subjective.

Every one naturally fancies that space and time are objective realities. But, says Kant, if they were, you could suppress them in thought; as you can, if you try, all empirical intuitions. Do what you will, you cannot get rid of space and time, even in thought. There is no thought divested of these characteristics. Will you surrender your belief in their objective reality, and suppose, with Hume, that "the ideas of space and time are no separate or distinct ideas, but merely those of the manner or order in which objects exist"?<sup>1</sup> Kant replies, "Space is not a conception which has been derived from outward experience. For . . . in order that I may represent them [objects] not merely as without, of, and near to each other, but also in separate places, the representation of space must already exist as a foundation. Consequently the representation of space cannot be borrowed from the relations of external phenomena through experience; but, on the contrary, this external experience is itself only possible through the said antecedent representation."<sup>2</sup> It is beside the purpose to say, as Bailey disdainfully says, "We see things in space because they are in space." For whether we think with Hume and Leibnitz that space is nothing but the relations of objects, or whether, with Mr. Bain, we ascribe the sense of it to "muscularity" and to the consciousness of particular energies and activities of our own, the old weak point of the analytical method at once confronts us:—to account for space we have to presuppose bodies, although bodies as extended objects, or as co-existing objects, or as objects successively occupying different places, equally presuppose space. "Space is nothing else than

<sup>1</sup> *A Treatise, &c.*, part ii. sect. 4.

<sup>2</sup> Tr. 24.

the form of all phenomena of the external sense—that is, the subjective condition of the sensibility under which external intuition is possible. Now, because the receptivity or capacity of the subject to be affected by objects necessarily antecedes all intuitions of these objects, it is easily understood how the form of all phenomena can be given in the mind previous to all actual perceptions, therefore *a priori*.”<sup>1</sup>

What space is to the external sense, time is to the internal. Consequently time is the form of all intuitions whatsoever, whether external or internal. Change, as we have elsewhere shown, being essential to consciousness, and sequence being essential to change, there can be no consciousness either of self or not-self except under the form of time. Space and time are “the condition of the mind’s receptivity, under which alone it can obtain representations of objects, and which, consequently, must always affect the conceptions of these objects.”<sup>2</sup>

We may pass to the other kind of forms—the FORMS OF THOUGHT. As these are a sub-class, they must be much less simple and more numerous. I shall only say a few words about them here, because it will be far easier to understand them when we see, presently, their use in Kant’s theory of the process of knowing.

Since the simplest perception involves the establishment of relations, *a fortiori* every conception involves a similar mental act. Every thought requires both a subject and a predicate. If we think of anything at all, we must think of it as this or that or the other. But the kinds of judgments we are able to make of things is limited. Kant limits the classes to four, viz., Quantity, Quality, Relation, and Modality. Under one or other of these four classes every conceivable judgment may be brought. For instance, we may think of things as one or as many, or, if we combine the two, as a whole or universal; this would be a judgment under the form of Quantity. Take Relation;

<sup>1</sup> Tr. 26.

<sup>2</sup> Tr. 62.

under this head, as under each of the four, Kant makes three subdivisions. Here they are substance and accident, cause and effect, and reciprocity, *i.e.*, the reciprocal action of cause and effect. Well, whenever we think of any event or any change, we think of it as connected with some other event or change in such a way that the recurrence of one involves the recurrence of the other. When formulated, the principle of this judgment is, "that all changes take place according to the law of the connections of cause and effect." This, then, is another typical form of judgment. And inasmuch as experience could never warrant the anticipatory character of our assumption, and does not (as Hume admits) suggest even that peculiar notion respecting the causal nexus, Kant pronounces this to be one of the *a priori* forms of thought.<sup>1</sup> To these four typical conceptions, with their twelve subordinates, Kant has given the name of CATEGORIES, or pure conceptions of the understanding.

The word *pure* has an important meaning, and is in constant use throughout the "Critique." It is opposed to empirical, which always refers ultimately to sensation. "I call all representations *pure*, in the transcendental meaning of the word, wherein nothing is met with that belongs to sensation." All the mental forms, therefore, are *pure* forms. The forms of thought are pure conceptions, the forms of sensibility pure intuitions.

We are now furnished with the instruments and elements of knowledge. The instruments we may call the conditions or forms, the elements the phenomena or matter. How is the relation brought about between the two which eventually constitutes knowledge?

<sup>1</sup> The consequences of making the causal judgment a form of thought are equal in importance to, and perhaps more easy to accept than, the similar treatment of time and space. For theologians, they entirely alter the aspect of the creation doctrine. If the law of cause and effect apply

only to the world of the senses, no arguments can be founded upon it which touch the transcendental conception of a world beyond the senses; and the same reasoning (as Kant points out) tells with the same force upon the freedom of the will. (*Vide infra*, p. 125.)

Return to a passage quoted above: "That which effects that the content of the phenomenon can be arranged under certain relations I call its form." Let us see what is meant by *content of a phenomenon*. I said the word *object* was delusive; that no such thing as a ready-made object was given (though the sensationalists assume it) as the cause of our perceptions. The object has to be put together by the mind before the mind can know it as object. A mere succession of isolated sensations could tell us nothing. It is possible that an oyster's intellectual life may consist of such. If so, the oyster knows nothing of objects; cannot even be said to be conscious. For, "consciousness is not simply a succession of changes, but an orderly succession of changes—a succession of changes *combined and arranged*."<sup>1</sup> "To be simply impressed with a light, sound, or touch, is not to know anything in the proper sense of the word." "Knowledge necessarily implies relations." Locke's "simple ideas" are consequently by no means so simple as he thought. The hand could not feel "softness" if the mind had not already known hardness, nor "warmth" if the mind had not already known cold. A sequence of unorganised, unconnected sense changes could not establish the relations necessary to knowledge; the changes could not collect or unite themselves into a whole or individual object; and if they could not do this, still less could they, "when loosened," as Hume says, "make us attribute to them a real simplicity or identity," such as each one of us feels himself to be. "Of all mental notions," says Kant, "that of conjunction is the only one that cannot be given through objects, but can be originated only by the subject itself, because it is an act of its purely spontaneous activity."<sup>2</sup>

Our notion of an object is that it is one thing; that it is a single thing possessed of a number of properties, but still possessed of its own simple unity and identity. The

<sup>1</sup> *Ante*, p. 162.

<sup>2</sup> *Tr. So.*

properties which go to make up any given object may be indefinitely numerous. Before they can be known as one thing, they must be made to assume some intelligible shape. They must be put together and systematically arranged; they must be organised *synthetically*, as Kant terms it. The "loosened" elements of an object are "the undetermined object of an empirical intuition." That much of these elements that corresponds to the sensation, *i.e.*, that ever can come within the range of our receptivity or sensibility, is the matter of a phenomenon. This indefinitely varied matter Kant calls "Das mannigfaltige der Vorstellungen"—the manifold of presentations, or the manifold of sensuous intuitions. The arrangement of this *manifold* is the process of knowing.

I speak of process. By way of caution, it should be observed that in this, as in other cases, although description must be consecutive, it does not follow that the process should be so too. In many of the phenomena of motion, for example, where heat, light, or electricity are developed, cause and effect are simultaneous, or, to speak more correctly, are different aspects of the same phenomenon. There are no time-relations between them. Avoiding any undue application of such mechanical instances, we may take them as illustrations of an important truth in Kant's theory of knowing. When he talks of objects affecting our senses, one might, as I said at first, suppose he held the mechanical theory of Locke, which he was anxious to refute. As just pointed out, however, Kant's *object* bears no resemblance to Locke's, which exists outside and independently of mind, but, on the contrary, the existence of the object known *and* of the mind knowing depend on their co-existence. There is no first or last in the case.

To return to the arrangement of the manifold. "Synthesis is that by which alone the elements of our cognitions are collected and united into a certain content; consequently, it is the first thing on which we must fix

our attention if we wish to investigate the origin of knowledge." <sup>1</sup> How is synthesis effected? How are the various presentations joined together, so that their diversity shall be represented in one cognition? That such synthesis is necessary to knowledge cannot, I think, be disputed. Kant's explanation of it may be objected to, his division of the mind's powers, and his assignment of special functions to special faculties, may be deemed capricious or dogmatic, but his argument that the manifold contents of phenomena must be synthetically arranged, and that the principle of unity is not derived from experience, gives us a deeper insight into the problem of knowledge and indicates a safer clue to the many paths by which it is to be approached than any other system yet devised.

Synthesis, we are told, is "the mere operation of the imagination—a blind but indispensable function of the soul." By this we are given to understand a spontaneous activity as opposed to simple sensibility. It suggests the automatic contraction round its sustenance of the tentacles of a sea-anemone. But this is only one step in the operation. The pabulum does not become food until it passes into the digestive apparatus. "The first thing which must be given to us in order to the *a priori* cognition of all objects is the diversity of the pure intuition: the synthesis of this diversity by means of the imagination is the second, but this gives as yet no cognition." "To reduce this synthesis to conceptions is a function of the understanding, by means of which we attain to cognition in the proper meaning of the term."<sup>2</sup> The understanding takes up the imperfect work of the imagination and reduces this to conceptions. "The conceptions which give unity to this pure synthesis, and which consist solely in the representation of this necessary synthetical unity, furnish the third requisite for the cognition of an object; and these conceptions are given by the understanding."

<sup>1</sup> Tr. 62.

<sup>2</sup> Tr. 63.

Here the *Categories* come into play. These are nothing but the pure forms of conception under which the intuitions, already determined by space and time, are thought or cognised as objects.

To recapitulate. "It will be found that the impressions of sense give the first occasion for bringing into action the whole faculty of cognition and for the production of experience, which contains two very dissimilar elements, namely, a matter for cognition, given by the senses, and a certain form for the arrangement of this matter, arising out of the inner fountain of pure intuition and thought; and these, on occasion given by sensuous impressions, are called into exercise and produce conceptions."<sup>1</sup>

Is the operation concluded? No! The finishing-touch is still wanting to complete the process of knowing. Every sensation, every perception, to be known at all, must be known as that of the subject knowing. "The *I think* must accompany all my representations." At least it must be possible to think of them as related to *me*; for nothing incapable of such relation to myself could be known by me.

Now what is this *me*? What do I mean by *mine*? "The manifold representations given in an intuition would not all of them be *my* representations if they did not all belong to one self-consciousness."<sup>2</sup> By *me*, then, I mean one self-consciousness. And what do I mean by one self-consciousness? Why, I mean that a sequence of unsynthesised sensations would not be known, consequently would not give rise to consciousness, nor to a self as knowing anything about them. For self is nothing but the united consciousness of sensuous changes, or, if you please, sensuous changes united in consciousness. The synthesis, then, not only refers to the manifold taken objectively, but to the manifold taken subjectively. It has a twofold product. A relation is established by reciprocal

<sup>1</sup> Tr. 72.

<sup>2</sup> Tr. 82.

interaction, which results simultaneously in an object and a self. "The synthetical unity of consciousness is, therefore, an objective condition of all cognition, which I do not merely require in order to cognise an object, but to which every intuition must necessarily be subject in order to *become an object* for me; because in any other way, and without this synthesis, the manifold in intuition could not be united in one consciousness."<sup>1</sup> If, on the other part, this manifold were not united in one consciousness, whatever else might be, I should know nothing. There would be no identical self, but a mere flux of oyster-like states corresponding to the indefinite and undetermined contents or "loosened" matter of the phenomenon. "I must have as many-coloured and various a self as are the representations of which I am conscious," or of which I am not conscious, Kant might have said; for under these circumstances there would be no united self to be conscious, but, instead, a mere chaos of dislocated sensuous conditions—a chain without links, a series of zeros which amounted to nothing.

This is Kant's great "fundamental principle of the necessary unity of apperception," and inasmuch as it antecedes all thought, it is an *a priori* foundation of experience. For "conjunction lies not in the objects"—(this word, objects—*Gegenständen*—must, as we know, be taken with reservation)—"and cannot be originally borrowed from them and find its way into the understanding through perception, but is solely an operation of the understanding itself, which is nothing else than the faculty of binding together *a priori*, and of bringing the manifold of given presentations under the unity of apperception. This is the supreme principle of all human knowledge."<sup>2</sup>

So then there could be no such thing as *object* but for the *a priori* activity of the understanding. And since this very activity generates, nay, constitutes, self-con-

<sup>1</sup> Tr. 85.

<sup>2</sup> *Kritik*, 733.

sciousness, there could be no *ego* without the object. "It is the unity of consciousness alone that constitutes the possibility of representations relating to an object, and therefore of their objective validity, and of their becoming cognitions, and consequently the possibility of the existence of the understanding itself."<sup>1</sup> After all, this proposition that the unity of presentations which constitutes objectivity requires unity of consciousness in the synthesis of them is self-evident. "For it states nothing more than that all my representations in any given intuition must be subject to the condition which alone enables me to connect them as my representation with the identical self, and so unite them synthetically in one apperception by means of the general expression, *I think*."<sup>2</sup>

<sup>1</sup> Tr. 85.

<sup>2</sup> *Ibid.*

## LETTER XVIII.

IN these outlines you have a sketch of Kant's theory of the possibility of experience. Every other theory yet propounded has failed to show how anything can be known. "Since the mind in all its thoughts and reasonings hath no immediate object but its own ideas which it alone does or can contemplate, it is evident that our knowledge is only conversant about them." What justifies the distinction between "real" and "fantastical ideas?" How comes it that internal and external ever agree, or that the *ordo ad individuum* corresponds, as it does, to the *ordo ad universum*? that we can predict the return of a comet, or the advent of daisies and swallows with spring? The occasional causes of the Cartesians, the pre-established harmony of Leibnitz, Locke's appeal to sensation, Berkeley's reference to the Divine Mind, Reid's common sense, modern Monism in all its forms, are equally lame and impotent. One and all land us in sheer Idealism. And idealism, as Hume clearly proved, lands us in absolute scepticism.

The riddle, as is now apparent by Kant's showing, was unanswerable, because improperly put. If object and subject were two, no mechanical action of one upon the other could ever establish between them that relation which we call knowledge. If they were one, there would be no difference between real and fantastical. It is Kant's merit to have indicated "that the opposition between mind and matter is not an opposition between consciousness and something else than consciousness, but an opposition be-

tween two factors of consciousness. The unity of experience embraces both the inner and the outer life.”<sup>1</sup>

It was before hinted that the mind which Hume abolishes is presupposed in the abolition. Hume had said, “The identity which we ascribe to the mind of man is only a fictitious one.”<sup>2</sup> “They are the successive perceptions only that constitute the mind;” and the principle which connects these perceptions, so that the succession is a constant one, is the principle of association. “Were ideas entirely loose and unconnected, chance alone would guide them; and ’tis impossible the same simple ideas should fall regularly into complex ones (as they commonly do) without some bond of union among them, some associating quality, by which one idea naturally introduces another. . . . The qualities from which this association arises, and by which the mind is, after this manner, conveyed from one idea to another, are three, viz., *resemblance, contiguity* in time or place, and CAUSE and EFFECT.”<sup>3</sup>

We now see that without the presupposition of mind there could be no perceptions or sensations to associate. “When we speak of associating sensations, we mean by a sensation a certain state of the subject that has a general character, by which it is distinguished from other sensations, and can be recognised as the same on its recurrence. In other words, the associated sensation must be represented, not as it is to mere sense, but as it is when determined by the consciousness of an intelligent being, *i.e.*, it must be represented as an object which has a definite relation to other objects. . . . We can combine the manifold of sense in an object of thought only in so far as we bring that manifold under some general principle of relation.”<sup>4</sup> Only when this manifold is united under some

<sup>1</sup> Edward Caird, *The Philosophy of Kant*, p. 387. This is the most intelligible exposition of Kant in the English language. In French there are valuable criticisms of his system by Nolen and by Desdoutis. In

German perhaps the best is to be found in Kuno Fisher's “History of Modern Philosophy.”

<sup>2</sup> *A Treatise*, &c., part iv. sect. 6.

<sup>3</sup> *Ibid.*, part i. sect. 3.

<sup>4</sup> Caird, *ubi supra*, p. 340.

definite conception, under some *category* of the understanding, can an object exist to be related by association or by any other principle. Hume's mistake, as Professor Caird well observes, lay in supposing "that a mere sensitive consciousness is able to set its feelings before it as definite objects, and to pronounce that they resemble each other;" whereas "sensations identified as the same in repeated recurrence are already objects," and objects have no pre-existence to mind.

Sensationalism in the hands of Hume was made to refute itself; and scepticism—Hume's scepticism, that is—shares the same fate in the hands of Kant. The explanation of the origin of knowledge has assumed a new phase. We are now in a position to consider that which is of the deepest concern to us—its reality and its range.

With regard to reality. You remember Kant told us at starting, our first impression of the "Critique" would be "that it only serves to warn us against venturing with speculative reason beyond the limits of experience." And the claim he puts forth for the *positive* value of his work comes to little more than an assertion of its disciplinary character, whereby dogmatism is checkmated whatever be its move. This, as some think, must be accepted as a final estimate of its worth. Certainly from this point of view it is irrefutable; but when we inquire how far Kant removed the "scandal to philosophy" which he complained of, when we ask what he has to offer in place of an assumption as an article of mere belief in the existence of things external to ourselves, in vain we search the "Critique" for a satisfactory reply. Let it be granted even that Hume is answered; does not Kant saw off the branch which he himself is sitting on? Where can he put his foot down and exclaim, Here we have the reality which you failed to discover? <sup>1</sup>

<sup>1</sup> The reduction of the law of causality to a mere regulative principle, though an incalculable gain, as already observed, both to philosophy and to religion, is fatal to Kant's

own theory of the origin and possibility of knowledge. As Schopenhauer remarks, "He rests his hypothesis of the thing-in-itself on the necessity for an external cause of the

The explicit statements that all our knowledge begins with experience, and that sensuous intuitions are the indispensable groundwork of all thought, seem at the very outset to make the deprecated assumption of externality. Everywhere we meet with similar statements, *e.g.*, "The possibility of sensuous objects is a relation of these objects to thought, in which something (the empirical form) may be cogitated *a priori*; while that which constitutes the matter—the reality of the phenomenon (that element which corresponds to sensation)—must be *given from without*, as otherwise it could not even be cogitated by, nor could its possibility be presentable to, the mind."<sup>1</sup> Of course, we are well aware that this Dualism of Kant's has no affinity with that of Descartes or of Locke, for Kant's *object*, as he here says, only exists in relation to thought. But there can be no mistake about the *matter* or content of the phenomenon; this "must be given from without." In another place also, having shown how the application of the Categories is apprehended by making abstraction of the mode in which the manifold of an empirical intuition is given, he goes on to say, "There is one thing . . . of which I could not make abstraction, namely, that the manifold to be united must be given previously to the synthesis of the understanding, and independently of it."<sup>2</sup> So too we are repeatedly told that the categories have no meaning but in reference to empirical intuitions. "For every conception are requisite, firstly, the logical form of a conception (of thought) in general;" a category, that is; "and, secondly, the possibility of pre-

sensation produced in our organs;" while at the same time he declares the law of causality to be purely subjective, and quite inapplicable to noumena. "Schopenhauer," says M. Ribot, "fixes Kant in the following dilemma: either our sensations are purely subjective, and if so, how admit of a thing-in-itself? or else you admit of a thing-in-itself, which

you cannot do, without resting on the principle of causality, (the thing-in-itself being supposed as the cause of our sensations); in which case how refuse to the causal principle an objective validity? Your demi-idealism is not tenable."—*La Philosophie de Schopenhauer*.

<sup>1</sup> Tr. 35S.

<sup>2</sup> Tr. 89.

senting to this an object to which it may apply." <sup>1</sup> Also, "a conception which contains a synthesis must be regarded as *empty* and without reference to an object if its synthesis does not belong to experience." <sup>2</sup> And experience always refers in the last analysis to objects, or rather to the raw material of objects, as "affecting our senses" or "rousing our powers of understanding into activity."

Notwithstanding these statements, and numerous others equally unequivocal, we must not overlook the truth that the *reality* of the matter of a phenomenon, I mean of its external existence, depends not only on the reality or external existence of the phenomenon, but of something beyond this, viz., the noumenon. The matter of the phenomenon is that which, being intuited under the forms of space and time, and determined by the understanding under some general conception or category, becomes an *object* of thought; but what about the non-ego in itself out of all relation to mental forms? Is there or is there not any such thing? If there is, how do we know it? What business have we to believe in it? If there is not, both matter and form are subjective, and nothing is left but the "fantastical." We must think of matter and form as distinct. We may understand by "object" something which depends on both. But if we think of things in relation to our modes of intuition, we must, *per contra*, think of them out of such relation; we must think of them as things in themselves. "When we designate certain objects as phenomena or sensuous existences, thus distinguishing our mode of intuiting them from *their own nature as things in themselves*, it is evident that by this very distinction we, as it were, place the latter, considered in this their own nature (although we do not so intuit them), in opposition to the former; or, on the other hand, we do so place other possible things which are not objects of our senses, but are cogitated by the understanding alone, and call them intelligible existences (noumena).

<sup>1</sup> Tr. So.

<sup>2</sup> Tr. 162.

Now, the question arises whether the pure conceptions do possess significance in respect of these latter, and may possibly be a mode of cognising them?"<sup>1</sup>

The pretensions of ontology hang upon the answer to this question. For assuredly, unless the pure conceptions, *i.e.*, the Categories, are available for this end, then, since "the understanding possesses no other fundamental conceptions besides the Categories," Kant has nothing to fall back upon, and I know not how his ontology is to be saved. The forms of intuition can do nothing for him. They are "merely conditions of our sensibility." "If we take away the subject, or even only the subjective constitution of our senses in general, then not only the nature and relations of objects in space and time, but even space and time themselves disappear."<sup>2</sup>

In his "Refutation of Idealism" Kant stands out stoutly for "the *immediate* consciousness of the existence of external things, . . . be this consciousness understood or not." His proof is, that the determination of our existence in time, that is, internal experience, is possible only through external experience. That is to say, internal experience depends on a change in external relations. "The consciousness of my existence in time is therefore identical with the consciousness of a relation to something external to me." For all change implies a permanent, that is, a something which changes. Hence "my internal experience itself must depend on something permanent which is not me, which can be, therefore, only in something external to me, to which I must look upon myself as being related."<sup>3</sup> In other words, I can only be empirically conscious, or have experience of myself, as existing in time. Time implies change; change implies a permanent. Therefore, that which determines my existence and makes self-consciousness possible is this permanent; and this permanent is the *thing-in-itself* or the noumenon.<sup>4</sup>

<sup>1</sup> Tr. 184.

<sup>2</sup> Tr. 35.

<sup>4</sup> In his able "Defence of Philosophic Doubt," Mr. Arthur Balfour

<sup>3</sup> Preface to Second Edition.

Hear now what he says of noumena: "But, after all, the possibility of such noumena is quite incomprehensible, and beyond the sphere of phenomena all is for us a mere void—that is to say, we possess an understanding whose province does *problematically* extend beyond this sphere, but we do not possess an intuition by means of which objects beyond the region of sensibility could be given us, and in reference to which the understanding might be employed *assertorically*. The conception of a noumenon is therefore merely a *limitative* conception, and therefore only of negative use." It is not even an *intelligible object* for our understanding; "on the contrary, the kind of understanding to which it could belong is itself a problem, for we cannot form the most distant conception of the possibility of an understanding which should cognise an object, not discursively by means of the Categories, but intuitively in a non-sensuous intuition."<sup>1</sup> The Categories can have no application here, since they only come into play after the first steps towards experience have been taken.

If reality in the last resort depends on noumena, and if noumena are so hypothetical that they can only be thought of in a negative sense,—that is, pretty much as we think of nothing as opposed to something,—what avails the universality and necessity of *a priori* synthetic judgments? To say, as Kant says, that the synthetic movement of thought involves objective reference, or that the unity of consciousness constitutes the possibility of objective validity, may be true enough if we admit Kant's theory of "object." But this would not give us what Locke meant by reality as opposed to fantastical. It

writes: "If (by definition) change can only occur in the permanent, the fact that there *is* change is no doubt a conclusive proof that there is a 'permanent.' But the question then arises, *is* there change in this sense? How do we know that there is anything more than alter-

nation, which (by definition) *can* take place in the mutable? . . . It seems hard to understand why that which supplies unity to multiplicity may not also supply permanence to succession." (Part ii. chap. 6.)

<sup>3</sup> Tr. 187.

would only make the judgments true because we thought them so,—a principle which would equally give reality to spectres.

The great merit of Kant's doctrine of the unity of apperception is that, it gets rid of the old puzzle of the opposition between object as such and subject as such. It answers Hume and the associationists by showing that association could not explain knowledge because it presupposes it. Before sensations can be associated they must pass through the process of becoming known. It answers the materialists in the same way, by showing that matter and the whole objective world is a mental content, and to explain mind by matter "would be the explanation of mind by one of its perceptions," — the whole by a part. It answered the individualist (whose theory of knowing is derived from the analysis of his individual consciousness) by exposing the fallacy of making the external an inference from a primary knowledge of self as not external;—self being no more *given* to start from than is the thing inferred. Still, in spite of these benefits, there is a flaw in the critical doctrine touching external existence which painfully damps the clear ring of perfect consistency. If we follow Kant, we may surmount the huge difficulty of bringing object and subject into relation. Yet to account for either, or even the unity which transcends both, we must postulate something which is neither. Kant makes the assumption: Consciousness of self implies a permanent as the basis of change on which consciousness depends. But what justifies this assumption? His answer is to be found in his treatment of matter and form. "The understanding demands that something be given (at least in conception) in order to be able to determine it in a certain way."<sup>1</sup> The understanding demands it: it is a logical necessity, nothing more. What then becomes of the immediate consciousness of the external if the permanent which deter-

<sup>1</sup> Tr. 193.

mines my existence in time can only be thought of as the mere negation of all empirical existence? More than this, what becomes of the internal if its existence depends on being determined by that of which it is impossible to predicate existence?

“Reality” may have many meanings; the hallucinations of sleep or disease are as real while they last as pain or pleasure. As opposed, however, to Locke’s term “fantastical,” we may take it to mean externality. Now externality may have two distinct meanings. With Kant it had these two,—phenomenal externality and noumenal externality. By the first he intended objective validity, that is, the reality of objects in space, and as knowable to us. By the second he intended the reality, not of objects, but of something external to and out of all possible relation to our intelligence. This it is which I call reality, and this it is which Kant at once assumes and as good as renounces.

I asked just now, what avails universality and necessity? I meant, what do they avail against scepticism? Although Kant has for ever silenced dogmatism by means of the “Critique” generally, he has, nevertheless, reduced all knowledge to a purely subjective basis; and then has denied to subjectivity any validity save such as is merely logical. Let me further illustrate these remarks.

“The science of mathematics presents the most brilliant example of the extension of the sphere of pure reason without the aid of experience.”<sup>1</sup> When we construct a triangle or a cone, it is a mistake to suppose we borrow the types of these figures from experience. “We first construct conceptions of them by an *a priori* presentation of the sensible intuition [or figure] which corresponds to the conception.” Well, if this be so, their certitude and reality are worth as much as and no more than Locke’s estimate of them: “If we consider, we shall find it is only of our own ideas.” A remark, by the way, which, the Kantians tell us, proved Locke only just to have missed

<sup>1</sup> Tr. 434.

the discovery of their master. Again, according to Kant, reason does not follow in the leading-strings of Nature, but Nature must take the mould and form of reason.<sup>1</sup> All the great discoveries of geometricians and natural philosophers have been reached in this way. "So the central laws of the movements of the heavenly bodies established the truth of that which Copernicus at first assumed only as a hypothesis." The discovery would never have been made had not Copernicus, instead of looking to Nature, looked into his own mind. This reduces the laws of Nature to laws of mind. Indeed, the explanation of the causal judgment, by making it an *a priori* conception of the understanding, can have no other consequence than this. But, so far as scepticism is concerned, wherein has such a theory any the least advantage over Hume's force of habit? Are not both principles exactly on a par in respect of subjectivity?

"Categories are conceptions which prescribe laws *a priori* to phenomena, consequently to Nature as the complex of all phenomena; and now the question arises—inasmuch as these categories are not derived from Nature and do not regulate themselves according to her as their model, . . . how is it conceivable that Nature must regulate herself according to them; in other words, how the categories can determine *a priori* the synthesis of the manifold of Nature, and yet not derive their origin from her?" The following is the solution of the enigma.

"It is not in the least more difficult to conceive how the laws of the phenomena of Nature must harmonise with the understanding and with its *a priori* form—that is, its faculty of conjoining the manifold—than it is to understand how the phenomena themselves must correspond with the *a priori* form of our sensuous intuition. For laws do not exist in the phenomena any more than phenomena exist as things in themselves. Laws do not exist except by relation to the subject in which the phenomena inhere, in so far as it possesses understanding, just as

<sup>1</sup> Tr. xxvii.

phenomena have no existence except by relation to the same existing subject, in so far as it has senses. To things as things in themselves, conformability to law must necessarily belong, independently of an understanding to cognise them. But phenomena are only representations of things which are utterly unknown in respect to what they are in themselves. *But as mere representations, they stand under no law of conjunction except that which the conjoining faculty prescribes. . . .* Now, as all possible perception depends on the synthesis of apprehension, and this empirical synthesis itself on the transcendental, consequently on the categories, it is evident that all possible perceptions, and therefore everything that can attain to empirical consciousness, that is, all phenomena of Nature, must, as regards their conjunction, be subject to the categories. And Nature . . . is dependent on them as the original ground of her necessary conformability to law.”<sup>1</sup>

Nothing can be clearer, or more consistent with the principle of the unity of apperception. This principle, if true of objects, is true of the complex of all phenomena. Nature is to us what it is, because we make it so. Our interpretation of it, in short, is purely subjective. This is not all. Self, by Kant's showing, has no more reality than the not-self. For, as known to ourselves, we ourselves are objects of thought. We can only be conscious of self through external changes, and as determined in time. Self, as known to us, only exists in its unity and identity through the unity of apperception. Self, therefore, is only known empirically, and in virtue of this empirical element, which enters into our intuition of it, it stands precisely on the same footing as other phenomena. “We must arrange the determinations of the internal sense as phenomena in time exactly in the same manner as we arrange those of the external sense in space, and consequently, if we grant respecting, this latter that by means of them we know objects only in so far as we are affected externally, we must also confess with regard to the internal sense that

<sup>1</sup> Tr. 100.

by means of it we intuite ourselves only as we are internally affected by ourselves. In other words, as regards internal intuition, we cognise our own subject only as phenomenon, and not as it is in itself." <sup>1</sup>

Hume accepted Berkeley's refutation of material substance, and carried out the idea to the rejection of mental substance. What other result than this have we now arrived at? What is the gist of Kant's criticism of Hume? "Hume's system puts itself in doubt, because its objections are founded on accidental facts, and not on principles which necessarily oblige us to renounce the right of making dogmatical assertions." What does this import, forsooth, but that Hume's scepticism was not irrefutable because it did not go far enough; not so far, that is, as his own? Cousin, in his lectures on Kant, finds fault with this antagonism between reflective and spontaneous reason, and complains of subjectivity being made a ground of scepticism. "If," he says, "the character of subjectivity alone justifies scepticism, then God himself must be involved in a scepticism from which he could no more escape than man."

The charge of incompleteness against Hume on the score that his scepticism is liable to be upset for want of systematic demonstration cannot be retorted upon Kant. The dogmatist is silenced in his presence, and the bearing of the critical philosophy upon Materialism, just alluded to, manifests itself conspicuously the moment we contrast the former with the Relativism already examined, or with Neo-Kantianism as represented by Lange.

Kant, of course, was as absolute a relativist as any one. But there is no necessary connection between Relativism and Transcendentalism. The Relativism of such thinkers as Lange, Dr. Huxley, or Professor Helmholtz, for instance, has but a superficial and deceptive resemblance to Kant's transcendental Ideality. The first is the necessary and obvious consequence of empirical psychology. It is reached by strictly scientific methods, and the instruments of its

<sup>1</sup> Tr. 96.

verification are the scalpel and the microscope. The latter is the unique product of Kant's metaphysic. One is due to the subjectivity of sensation as resulting from the speciality of our organisation, the other to the denial, to Space and Time, of reality in the above sense of the word. One is based entirely on sensation, the other on perception and conception equally. Relativists may consistently adopt either Materialism or Idealism. They may believe with Lange that "the world of the senses is a product of our organisation," and that "the transcendental ground of our organisation remains quite as unknown to us as the things which operate upon it." They may then choose one of two explanations. For, as Lange says, it is "*nahezu gleichgültig*"—nearly indifferent—whether one speaks of a spiritual or physical organisation.<sup>1</sup> If they hold also with Lange that, "our visible corporeal organs, like all other parts of the phenomenal world, are only images of unknown objects," they believe that the cause or condition of sensation *occupies space* just as do the objects we perceive. They believe in a thing in itself in a positive sense, as *id quod substat accidentibus*, and in this case they might be materialists. On the other hand, they may identify thought and being, and so make it not "nearly," but entirely indifferent, to which they ultimately refer. In this case they must be *empirical* Idealists. The modern outcome of these two theories is respectively Positivism and Agnosticism. But from either of these alternatives Kant has emphatically precluded himself. He strenuously warns us not to overlook the wide distinction between empirical Idealism—which pertains merely to the mode of sensuous perception—and his own transcendental Idealism, of which he thus speaks:—"My purpose in the above remark is . . . to guard any one against illustrating the asserted ideality of space by examples *quite insufficient*—for example, by colour, taste, &c.; for these must be contemplated, not as properties, but only as changes in the subject—changes which may be different in different men.

<sup>1</sup> *Ges. d. Mat.*, vol. ii. p. 411.

For in such a case, that which is originally a mere phenomenon—a rose, for example—is taken by the empirical understanding for a thing in itself, though to every different eye, in respect of its colour, it may appear different. On the contrary, the transcendental conception of phenomena in space is a critical admonition that, in general, nothing that is intuited in space is a thing in itself, and that space is not a form which belongs as a property to things, but that objects are quite unknown to us in themselves; and what we call outward objects are nothing else but mere representations of our sensibility, whose form is space, but whose correlate, the thing-in-itself, is not known by means of these representations, nor ever can be, but respecting which, in experience, no inquiry is ever made.”<sup>1</sup>

It is by statements similar to this contained in these last sentences that one is apt to be misled in comparing the two doctrines. Both equally terminate in the absolute subjectivity of the known, with reference more or less vague to the unknown as its cause. But the difference lies in the positive and negative conception of the noumenon as differently admitted by the relativists and by Kant. As above stated, the relativist, adopting the positive sense, assumes the rose, “like our visible corporeal organs” which it affects, to be the image of an unknown object, which unknown object occupies space, and is a thing-in-itself. The thing is *there*, although it never can be known *what* it is. Now, Kant positively lays it down that we cannot think of noumena in any but a negative sense.<sup>2</sup> The thing-in-itself has no space relations, for space is not a form which belongs as a property to things. Apart from the perception of objects space does not exist.

It is needless to dwell further on a difference so fundamental as this. But it is important to bear in mind that while one doctrine lends itself readily to Materialism, the other is absolutely incompatible with it.

<sup>1</sup> Tr. 27.

<sup>2</sup> We have seen that he is not always at one with himself on this head.

## LETTER XIX.

IT being my wish to keep well within the bounds of clearness and simplicity, I may not venture to probe deeper into Kant's views concerning the validity of knowledge. We have, however, pursued the inquiry far enough to be sure that little remains to be said of his opinions as to its limits. To show that the critical doctrine must be greatly strained to admit harmoniously of ontological belief, we have but to return to the arguments already set before us.

Speaking of those dogmatists who promise to extend human knowledge beyond the limits of possible experience, Kant says: "I humbly confess this is completely beyond my power;" and the whole "Critique" is illustrative of the fact. The truths of mathematics, as Descartes had affirmed, are reached deductively from axioms the certitude of which is intuitively known. But it is an error to believe, with Descartes, that, starting from the axiomatic certainty of our own existence, we may attain to the knowledge of a Supreme Being by the same deductive method. There is a limit even to *a priori* knowledge. That limit is the world of experience. "All conceptions, . . . and with them all principles, however high the degree of their *a priori* possibility, relate to empirical intuitions, that is, to data towards a possible experience. Without this they possess no objective validity, but are a mere play of the imagination or of understanding, with images or notions, . . . Hence it is requisite that an abstract conception be *made sensuous*, that is, that an object corresponding to it in intuition be forthcoming, otherwise the conception remains, as we say, without *sense*, that is, without meaning. Mathematics fulfils this requirement by the construction of the figure, which is a phenomenon evident to the senses.

The same science finds support and significance in number. This in its turn finds it in the fingers or in counters, or in lines and points.”<sup>1</sup>

Everywhere we are reminded that the application of the *a priori* forms of thought is strictly limited to experience; “that we cannot render intelligible the possibility of an object corresponding to them without having recourse to the conditions of sensibility.” “The understanding is competent to effect nothing *a priori* except the anticipation of the form of a possible experience in general. And as that which is not phenomenon cannot be an object of experience, it can never overstep the limits of sensibility, within which alone objects are presented to us.”<sup>2</sup> “It may be true that there are *intelligible existences* to which our faculty of sensuous intuition has no relation and cannot be applied, but our conceptions of the understanding as mere forms of thought for our sensuous intuitions do not extend to these. What, therefore, we call noumena must be understood in a negative sense.”<sup>3</sup>

Kant quite agrees with those who hold that we are compelled to conceive the existence of God as “the idea of something on which the supreme and necessary unity of all experience is based;” a something “which we represent to ourselves as standing in a relation to the whole system of phenomena analogous to that in which phenomena stand to each other.” “And yet, when we wish to admit the existence of a thing, it is not sufficient to convince ourselves that there is no possible obstacle in the way, for it cannot be allowable to regard mere creations of thought, which transcend, though they do not contradict, all our conceptions as real and determinate objects, solely upon the authority of a speculative reason striving to compass its own aims.”<sup>4</sup>

On the whole, the result is distinctly negative. True, Kant endeavours to show that “our knowledge of the existence of things, and what may be inferred from them according to empirical laws, reaches as far as our percep-

<sup>1</sup> Tr. 180.<sup>2</sup> Tr. 183.<sup>3</sup> Tr. 186.<sup>4</sup> Tr. 413.

tions extend." But what does this amount to, if objective validity is constituted by the unity of consciousness, and if the unity of consciousness depends on something which may or may not exist? The empirical element which enters into self-consciousness reduces self to an empirical object of thought. Like all other objects, therefore, it is tainted with the ban of suspicion. The *cogito ergo sum* becomes the deepest of illusions; and if Kant reasons well, the one thing certain is Nihilism!

In Kant's theory of the causal judgment we have however one positive consequence. Obliterate the reality of space and time, and the law of causality necessarily shares their fate. As Professor Adamson observes, "We have not and cannot have any sound conception of causal connection apart from the relations of extended substances in space. Matter in motion seems the one objective fact to which we can properly apply the category of cause."<sup>1</sup> Obliterate the law of causality, and Freedom becomes a possible conception. Kant puts the question, "Whether an effect determined according to the laws of Nature can at the same time be produced by a free agent, or whether freedom and Nature mutually exclude each other? And here," he adds, "the common but fallacious hypothesis of the *absolute reality* of phenomena manifests its injurious influence in embarrassing the procedure of reason; for if phenomena are things in themselves [as the mere relativist takes them to be], freedom is impossible. In this case, Nature is the complete and all-sufficient cause of every event; and condition and conditioned, [God and the world, man and his acts] cause and effect, are contained in the same series, and necessitated by the same law. If, on the contrary, phenomena are held to be, as they are in fact, nothing more than mere representations connected with each other in accordance with empirical laws, they must have a ground which is not phenomenal."<sup>2</sup> He has elsewhere pointed out that, "all phenomena in the succession of time are only changes, that is, a succes-

<sup>1</sup> *Phil. of Kant*, Lect. iv.

<sup>2</sup> Tr. 332.

sion of being and non-being of the determinations of substance, which is permanent.”<sup>1</sup> Time being merely a form of the internal sense, our perceptions are necessarily successive; but this subjective necessity does not apply to substance or things in themselves. “Change is but a mode of existence which follows on another mode of existence of the same object; hence all that changes [all that of whose existence change is a mode] is permanent, and only the condition thereof changes.” In the *mundus intelligibilis* (as Kant calls the world that transcends sense) there is no change, no sequence of events in time, and therefore no causality. “It is consequently not the necessity of the *being* of things (as substances), but the necessity of the *state of things* that we cognise.”<sup>2</sup> Hence it follows that “the criterion of necessity in existence possesses no application beyond the field of possible experience; and even in this it is not valid of the existence of things as substances, because these can never be considered as empirical effects, or as something that happens and has a beginning.”

The impossibility of reconciling moral freedom with natural law is here overcome, first, by making the whole content of the phenomenal world—*i.e.*, Nature in general—a product of the understanding by means of the categories; and, secondly, by denying that space is a form of things in themselves. The delusion is not that, an efficient cause has started an absolutely new series (this is merely our way of stating the fact), but that time is other than one of the subjective elements of thought, which compel us “necessarily to attribute to things *a priori* all the properties which constitute conditions under which alone we can cogitate them.” The question transcends the law of Nature, and can therefore have none but a transcendental answer. We shall have occasion to return to it again; but it may here be observed that, in the opinion of some, Kant’s vindication of moral freedom is his greatest achievement.

<sup>1</sup> Tr. 141.

<sup>2</sup> Tr. 169.

## LETTER XX.

PERHAPS there is no part of the "Critique" in which the student meets with subtleties of such intricacy as in that we are about to consider. To simplify these without resorting to the technicalities of metaphysics would be tedious. To make use of Kant's vocabulary would entail difficulties of its own. Still, wherever his language is clear, it is better than any comment. The following passage needs none: "The aim of the cosmological argument is to avoid the necessity of proving the existence of a necessary being *a priori* from mere conceptions—a proof which must be ontological, and of which we feel ourselves quite incapable. With this purpose we reason from an actual existence—an experience in general—to an absolutely necessary condition of that experience."<sup>1</sup> The object of all possible experience being the world, it is called the *cosmological* proof.

It was admitted by Descartes that clearness of conceptions vouches only for its own truth, provided these are confined to existences. It has been repeatedly laid down by Kant that, all thought must ultimately relate to objects of sensibility. To avoid, therefore, the fallacy of inferring existence from mere conceptions—a fallacy which Descartes was guilty of, notwithstanding his own maxims—the cosmological argument sums up the contingent and phenomenal world into a synthetic series or complete whole; and taking this as an "experience in general," concludes from it an uncontingent or self-existing cause. This "experience in general," is that which distinguishes the

<sup>1</sup> Tr. 375.

cosmological from the physico-theological or Design argument. The latter starts from *particular* experience or special instances of adaptation.

The objections discoverable to this mode of proof are thus set forth: "(1.) The transcendental principle, everything that is contingent must have a cause—a principle without significance except in the sensuous world, &c. (2.) From the impossibility of an infinite ascending series of causes in the world of sense a first cause is inferred; a conclusion which the principles of the employment of reason do not justify even in the sphere of experience, and still less when an attempt is made to pass the limits of this sphere. (3.) Reason allows itself to be satisfied upon insufficient grounds with regard to the completion of this series, &c. (4.) The logical possibility of a conception of the total of reality (the criterion of this possibility being the absence of the contradiction) is confounded with the transcendental," &c., which requires reference to the world of experience.

It will not be amiss to recall here the objections which Hume urged against the cosmological argument as advanced by Locke. Though the process of reasoning is slightly different in form, the result reached is the same as Kant's. Locke's proof of God rested on the assumption that "what had a beginning must be produced by something else." "Thinking beings" had a beginning, and "since it is repugnant to the idea of senseless matter that it should put into itself sense, . . . we have a more certain knowledge of the existence of God than of anything our senses have not immediately discovered to us." Kant formulates the argument thus: "If something exists, an absolutely necessary being must likewise exist. Now I, at least, exist. Consequently there exists an absolutely necessary being."

Hume subverts the conclusion by disallowing the major premiss. This he does upon three counts of indictment. (1.) "It is more than we know that whatever begins to

exist must have a cause of existence:"—the principle is without significance except in the sensuous world. (2.) "Why not stop at the material world? How can we satisfy ourselves without going on *in infinitum*? And, after all, what satisfaction is there in that infinite progression? Let us remember the story of the Indian philosopher and his elephant. It was never more applicable than to the present subject. If the material world rests upon a similar ideal world, this ideal world must rest upon some other, and so on without end." This answers to the second and third of Kant's objections: Reason allows itself to be satisfied upon insufficient grounds. (3.) "When we infer any particular cause from an effect, we must proportion the one to the other, and never be allowed to ascribe to the cause any qualities but what are exactly sufficient to produce the effect."<sup>1</sup> As Kant puts it, "In the explanation of phenomena, no other things and no other grounds of explanation can be employed than those which stand in connection with the given phenomena according to the known laws of experience."

It is useless to try to explain what we do not sufficiently understand from known empirical principles by what we do not understand at all. Even in the sphere of experience the employment of reason must be guided by this principle. Nothing can justify our attempts to pass the limits of this sphere by means of the very principles which limit it. We cannot, that is to say, apply the law of Nature, which rules both as to the matter and as to form of our ideas, to a sphere which, *ex hypothesi*, transcends this law. The very notion of a First Cause—a cause which is not itself an effect—abrogates then and there the empirical law. Kant's fourth objection is that the movement of reason in this direction is in obedience to a necessity which is purely logical. We imagine this logical conception to be transcendently valid; but we discover our error the moment we subject it to the ordeal through

<sup>1</sup> *Essays*, § 11.

which all *pure* conceptions must pass, viz., ultimate reference to a possible experience.

Summed up, the objections of Hume and of Kant amount to this: It is a fallacy to suppose that by ascending the series of contingent events we can ever arrive at a complete synthesis of the whole. The experience 'in general' is purely imaginary. Secondly, could we do so, experience can only warrant us in conclusions strictly within its own province. We can never leap from the contingent to the necessary. The attempt to do so is merely an attempt to satisfy reason, which, impelled by habit to ascribe every change to a cause, makes an imaginary ascent of the entire chain of events, and ascribes the whole to a First Cause. But "there is nothing in any object, considered in itself, which can afford us a reason for drawing a conclusion beyond it;" and if this be true of each event, it is equally true of the aggregate. "It is evident," says Kant, "that as all phenomena are subject to change, and conditioned in their existence, the series of dependent existences cannot embrace an unconditioned member, the existence of which would be absolutely necessary." Also, "If the Supreme Being form part of the chain of these conditions, then must he himself be a member of the group, and no less than the inferior members which he initiates call for further investigation concerning his own antecedents," — *noch fernere Untersuchung wegen seines noch höheren Grundes erfahren.*

That a First Cause cannot be reached by reasoning from experience, consequently that the cosmological argument, which takes the complete series of contingent events as an "experience in general," is illusory, may receive further proof from the following mode of stating the objection. "Everything that happens presupposes a previous condition, which it follows with absolute certainty in conformity with a rule. But this previous condition must itself be something that has happened—that has arisen in

time; as it did not exist before. For if it has always been in existence, its consequence or effect would not thus originate for the first time, but would likewise have always existed."<sup>1</sup> Now every beginning of action presupposes in the acting cause a state of inaction, and a dynamically primal beginning of action presupposes a state which has no causal connection with any preceding state whatsoever. The *thesis* and the *antithesis* mutually exclude each other. These two propositions cannot be reconciled.

We may put it in another way: "A beginning supposes a time preceding, in which the thing that begins to be was not in existence." Consequently, whatever happens in time—whether a single change, or the totality of all changes—must be the effect of a cause whose operation also commenced in time; in course of the time, that is, which preceded its action as a cause. But if a cause whose operation begins in time must be determined to action by a previous cause, this necessity of linking every cause, however far back we go, to some previous cause,—this necessity of a regress *in infinitum* destroys the possibility of completing the series, and so reaching an absolute totality which will serve for an "experience in general."

"Thus it is properly the ontological argument which figures in the cosmological and constitutes the whole strength of the latter; while the spurious basis of experience has been of no further use than to conduct us to the conception of absolute necessity, being utterly insufficient to demonstrate the presence of this attribute in any determinate existence or thing."<sup>2</sup> Even supposing the cosmological argument could lead us to a necessary or primary cause, what proof could it offer us that such a principle was not contained in the world itself? And, says Hume, "by supposing it [the material world] to contain the principle of its order within itself, we really

<sup>1</sup> Tr. 278.

<sup>2</sup> Tr. 373.

assert it to be God; and the sooner we arrive at that Divine Being so much the better. When you go one step beyond the mundane system, you only excite an inquisitive humour which it is impossible ever to satisfy." Having based our argument upon the empirical law of causation, we cannot transgress our own conditions; we therefore never can ascend beyond the highest member in the cosmical series. We can never get beyond some law of Nature which in its universality includes all subordinate laws. To reach beyond this, we must have recourse to the ontological method, and this has been shown to be utterly impracticable, at least utterly useless, since the only grounds of its support are mere conceptions derived from the nature of our own mind.

The result, so far as theology is concerned, may thus be summed up: "If the Supreme Being forms a link in the chain of empirical conditions, it must be a member of the empirical series, and, like the lower members which it precedes, have its origin in some higher member of the series. If, on the other hand, we disengage it from the chain, and cogitate it as an intelligible being apart from the series of natural causes, how shall reason bridge the abyss that separates the latter from the former?"<sup>1</sup>

Here we must bring our epitome of this great work to a close. For constructive theology it leaves but little room; nevertheless, if the anthropomorphic conception of God is set aside, Atheism is refuted on precisely the same score. "The same arguments which demonstrated the inability of human reason to *affirm* the existence of a Supreme Being, must be alike sufficient to prove the invalidity of its denial. For it is impossible to gain from the pure speculation of reason demonstration that there exists no Supreme Being as the ground of all that exists, or that this Being possesses none of those properties which we regard as analogical with the dynamical qualities of a

<sup>1</sup> Tr. 381.

thinking being.”<sup>1</sup> This restraint, this mental discipline, arrived at by critical analysis, together with our emancipation from the phenomenal law of causation by converting space and time into forms of intuition, are the two great results upon which must be grounded Kant’s claims to rank with the highest of philosophic teachers.

A few words may here be said concerning the criticism of positivists upon the doctrine of Kant. The charge they bring against him is, that he confuses cognitions with the conditions of cognition. “It is not ideas,” says Lewes, “that are independent of experience, but the organic conditions on which ideas depend.”<sup>2</sup> (Kant would have been surprised to hear, he had believed in ideas independent of experience.) “The spontaneity of mind was never *wholly* denied even by those of the sensational school who regarded mind as a product of the senses. . . . All the schools presupposed certain laws of mental combination. These constituted the subjective conditions of experience; whatever spontaneity could be attributed to the mind was assigned to them. But no one accurately defined them. . . . Unhappily, having approached the psychological problem from the wrong side, and employing the metaphysical method of subjective analysis when the biological method of objective analysis was equally indispensable, he not only failed to discover what were the conditions of sensibility and the laws of thought, but by the potency of his genius retarded progress in that direction.”<sup>3</sup>

The whole of our labour, from the first to the last of our letters on philosophy, will have been wasted if it be not by this time palpable that, whatever may be thought of Kant’s theory of knowing, he clearly proved (as is demonstrated by our criticism of Locke) that the “wrong side” on which to approach mental problems is the biological or material side. In the first place, it is misleading to say that the spontaneity of mind was never *wholly* denied by sensualists. For unless regarded as a pro-

<sup>1</sup> Tr. 393.

<sup>2</sup> *Hist. of Phil.*, vol. ii. p. 517.

<sup>3</sup> *Ibid.*, p. 525.

duct of the senses (which it certainly is not by the Leibnizian school), the very existence of mind is denied by these, and reduced to a sequence of nerve-changes or states of sensibility. To accuse Kant of confusion, therefore, because he did not explain all subjective conditions of thought as organic conditions, is no more than to accuse him of not being a materialist. It is no answer to Kant, but a bald statement of the biologist's point of view, to say: "The fact that we think at all is assuredly determined by our being so organised that thought is the activity of the organs; this organisation is therefore *a priori*, i.e., anterior to any thought."<sup>1</sup> Kant would have regarded this as mere quibbling. He was fully prepared to admit the validity of the biological method in its own sphere; but having a transcendental problem to solve, he advisedly approached it from the transcendental side.

Even in the hands of the positivist it does not appear how the biological method can be made to do the work assigned to it. For what does biology teach us? It bids us seek the explanation of function in the structure of its appropriate organ, and what do we learn then? That it is impossible to decide whether function originates organ or organ originates function. If life be defined as "the definite combination of heterogeneous changes, both simultaneous and successive,"<sup>2</sup> then, the function of life consists in starting these changes no less than in keeping them going. And, logically, we are debarred, by the principles of evolution, from regarding life as a product of organisation. For "on this hypothesis organic matter in a state of homogeneous aggregation must precede organic matter in a state of heterogeneous aggregation. But since the passing from a structureless state to a structural state is itself a vital process, it follows that vital activity must have existed while yet there was no structure; structure could not else arise."<sup>3</sup>

From organ to function, and from function to organ, the

<sup>1</sup> *Loc. cit.*

<sup>2</sup> *Principles of Psychology*, chap. iv.

<sup>3</sup> *Ibid.*

seesaw is complete. To turn from transcendentalism to biology is only to escape "from the smoke into the smother." The whole cannot be explained by the part, for the part has no existence save through the whole. Nerves and organs are objects, just as a complete animal is an object, and the knowledge of objects as such cannot be explained by assuming these objects to exist primarily. The establishment of relations is the enigma which no theory of evolution will serve in the least degree to make less mysterious. The theory of evolution is simply not in sight of the problem which Kant undertakes to investigate; for so far as this is concerned, it complacently takes for granted all that requires explanation.

The principle of heredity, which is the backbone of organic evolution, is no new explanation of forms of thought. It is, as Descartes tells us, precisely what he meant by innate ideas. "I have used this term in the same sense as when we say that generosity is innate in certain families, or that certain maladies, such as gout or gravel, are innate in others; not that children born in these families are troubled with such diseases in their mother's womb, but because they are born with the disposition or the faculty of contracting them."<sup>1</sup> It is superfluous to say that this reference to the maternal womb does not take us one step beyond the range of empirical knowledge.

It is not the facts of such knowledge, but the mystery of their possibility which Kant undertook to investigate. If he failed to serve Philosophy by clearing up that mystery, he served Religion by everlastingly establishing it.

<sup>1</sup> See Huxley's *Hume*, p. 83.

# INDEX.

---

- ABISHAG**, Justin Martyr on, 64.  
**Abraham**, his religion, 126.  
 — God of, 164.  
**Abram**, his words to Sarai, 28.  
**Adam**, could not have spoken of his own mother, 12.  
**Adamson**, Prof., matter in motion, ii. 235.  
**Agag** hewn in pieces by Samuel, 38.  
**Agassiz**, Prof., dogmatic assertions of, 296.  
**Ahab** attacks Ramoth Gilead, 40.  
**Aimer**, c'est avoir besoin, ii. 79.  
**Akkadian** tongue, origin of, 113.  
**Akkadians**, history of, 122.  
**Alexander**, time of, 14.  
 — miracles for, 35.  
**Alexandria**, foundation of, 9.  
 — new creed, 216.  
**Alexandrian** Jews ignorant of Hebrew, 10.  
**Alexandrine** versions of Bible, 8.  
**Alimentary** tract, how formed, 277.  
**Altruism**, suicidal, ii. 87.  
**Amalekites**, cruelty to them, 37.  
**Ammon**, country wasted, 38.  
**Ammonite** god, 163.  
**Amos** on sacrifice, 21.  
**Anachronisms** in Mosaic account, 30.  
**Ancon** sheep, ii. 91.  
**Animism**, 73.  
**Aphis**, generation of, ii. 105.  
**Apocalypse** crude and graceless, 201.  
**Apocryphal** books of Bible, 8.  
**Apophis**, great serpent, 151.  
*A priori* doctrine tabulated, ii. 269.  
**Aquila**, his version of Bible, 8.  
**Arago**, eccentricity of earth, ii. 28.  
**Aramaic** language of Jews, 11.  
**Aramaic** character, no early MSS. in, 17.  
**Ararat**, elevation of, 27.  
 — derivation of word, 115.  
**Archæopteryx** (a fossil bird), 280.  
**Aristippus**, doctrine of, ii. 65.  
**Ark** resting on Ararat, 26, 27.  
**Arnold**, Matthew, 43.  
 — his liter and dogma, 44.  
 — on prophecies, 63.  
**Artaxerxes**, his time, 10.  
**Aryans**, point of departure, 107.  
**Ashtoreth**, a god, 24.  
**Asoka**, rock and pillar edicts, 214, 216.  
**Assyrian** account of the creation, 146.  
**Atavism**, laws of, 285.  
**Atheistic** doctrine, criticism of, ii. 177.  
**Augustine**, St., instance of sick man, ii. 60.  
**Automata**, Descartes' theory on, ii. 200.  
**Azarial**, sacrifices under, 21.  
**BAALIM**, gods, 24.  
**Babel**, Tower of, tablets, 150.  
**Babylon**, false prophecy on, 52.  
**Babylonian** accounts of creation, 143.  
 — relations with Chinese, 113.  
 — ideas of deluge, 140.  
**Babylonish** captivity, inspiration of prophets under, 53.  
**Bach**, one of his fugues, ii. 184.  
**Bacillus**, 269.  
**Bacterium**, 269.  
**Bailey**, Samuel, 170.  
**Bain**, prudence and duty, ii. 73.  
 — basis of sympathy, ii. 80.  
 — on sensation, ii. 148.

- Bain, dispute between Locke and Leibnitz, ii. 163.  
 — succession of mental processes, ii. 197.  
 — on thought as an operation of energy, ii. 201.  
 — passage of motion into sensation, ii. 209.  
 — control of feelings, ii. 253.  
 Balaam, words of, 45.  
 Balfour, F. M., on comparative embryology, 272.  
 — characters of ovum, 274.  
 — defence of philosophic doubt, ii. 303.  
 Baptism of Jews, 185.  
 Barratt, A., on sensation, ii. 148.  
 — action follows motive, ii. 248.  
 Barnabas, evidence of, 182.  
 — his Epistle doubtful, 199.  
 — silence of, 200.  
 Bastian on spontaneous generation, 268.  
 Bates, Mr., principle of mimicry, 259.  
 — on mimicry, 287.  
 Bauer, his labours, 6.  
 Bazeilles, French sergeant at, ii. 211.  
 Beal, Prof., on Buddha, 207, 214.  
 Beethoven, reproduction of his works, 15.  
 — benefit of his works, ii. 123.  
 Belief, religious, analysis of, 4.  
 Bentham, Jeremy, on utilitarianism, ii. 61.  
 Berkeley, Bishop, ii. 154.  
 — extreme form of idealism, ii. 223.  
 — controversy on substance, ii. 228.  
 — idealism of, ii. 260, 286.  
 — references to Divine Mind, ii. 298.  
 Bernard, Claude, on cell theory, 273.  
 Berossus discredited, 117.  
 — on Median invasion, 123.  
 — narrative of creation, 143.  
 Bible only true account of divine revelation, 14.  
 — number of believers in, 14.  
 — what is known of it, 15.  
 Bichat quoted by Schopenhauer, ii. 252.  
 Birth of Christ, 204.  
 Brown, philosopher, 171.  
 — theory of miracles, 174.  
 Brugsch, Dr., quoted, 120, 121, 128.  
 — on Egyptian gods, 132.  
 — on God, 163.  
 Büchner, nature of philosophy, ii. 125.  
 Budd, Dr., on air, 270.  
 Buddha born of a virgin, 205.  
 — temptation of, 207.  
 Buddhism and Christianity, 210.  
 Buddhist queen of heaven, 206.  
 Bud-variation, distinct individuals produced, ii. 91.  
 Bunsen, Chevalier, basis of polytheism, 86.  
 — his opinion, 116.  
 — on date of pyramids, 130.  
 — on creation, 144.  
 — on monotheism, 156.  
 Burnouf on deluge, 139.  
 — lotus of good faith, 212.  
 Burton, R. F., savage instincts, 71.  
 Butler, Bishop, theory of miracles, 175.  
 Butterflies, mimicry in, 287.  
 CÆSAR, death of, 209.  
 Caird, E., philosophy of Kant, ii. 299.  
 Calderwood, brain as a whole, ii. 214.  
 Canaanites, their treatment, 37.  
 Canine teeth in man, 285.  
 Capellini on Pliocene of Poggiorone, ii. 10.  
 Carneades, right and wrong, ii. 79.  
 Carpenter, mental physiology, 178.  
 — on foraminifera, 253.  
 — transition from physical to psychical change, ii. 195.  
 — consciousness of events, ii. 219.  
 Categories, ii. 291, 295.  
 Catholic (Roman) Bible, 7.  
 Causation, theory of, ii. 230.  
 — by experience, theory of, ii. 240.  
 Cell theory, 273 ; ii. 101.  
 Chaldeans, history of, 122.  
 Chemosh, god of Moab, 24.  
 China, religions in, 99.  
 Chinese relations with Babylon 113.  
 Chladni, experiments on vibration 236.

- Christ, birth of, 204.  
 Christianity and Buddhism, 215.  
 Christmas Day, birthday of Buddha, 201.  
 Church-goers change their ideas, ii. 14.  
 Claims of realism and idealism, ii. 145.  
 Claire, St., her poetic ignorance, 178.  
 Clairvoyance of Hebrew prophets, 50.  
 Classification now adopted, 286.  
 Clemens Romanus quoted, 182, 183, 191.  
 — on Gospel of St. John, 192.  
 — does not mention fourth Gospel, 193.  
 Clementine homilies spurious, 200.  
 Clifford, W. K., on hylozoism, ii. 148.  
 — opinions adopted for consistency, ii. 187.  
 — on thought as an operation of energy, ii. 201.  
 — his theory of matter, ii. 204.  
 — animates all matter, ii. 208.  
 — his essays, "Body and Mind," ii. 253.  
 Clock, universe compared with a, ii. 97.  
 Colebroke on Veda, 100.  
 Colenso, Bishop, his arithmetical objections, 31.  
 Coleridge, S. T., on design, 228.  
 — geometry applied by material objects, 236.  
 — distinction between reason and understanding, ii. 260.  
 Comet, Encke's, proof of, ii. 175.  
 Compsognathus (a fossil reptile), 280.  
 Comte, positive philosophy, 69.  
 — gospel of Positivism, ii. 125.  
 Conjectures, prophecies merely, 52.  
 Cope, Prof., on Megadactylus, ii. 49.  
 Copernicus, hypothesis of heavenly motions, ii. 307.  
 Corpuscles of blood, ii. 108.  
 Cosmological proof, 223.  
 Cousin, prudence and duty, ii. 73.  
 — modern representative of ontology, ii. 257.  
 Cousin's philosophy, ii. 259.  
 Coverdale's translation of Bible, 6.  
 Creation tablets of Assyria, 149.  
 — of Eve, 48.  
 — of world, 141.  
 Creator either limited in power or indifferent, 237.  
 Credner quoted, 189.  
 Creuzer, Dr., his *Alten Völker*, 93.  
 Croll, Prof., on Miocene, ii. 3.  
 — on death of Pleistocene animals, ii. 8.  
 — on climate and time, ii. 21.  
 — rate of sedimentary deposits, ii. 24.  
 — on climatic variations, ii. 27.  
 — on eccentricity, ii. 34.  
 Cromer Forest, ii. 6.  
 Cuvier, his system, 250, 252.  
 — on Egyptian mummies, 300.  
 — on dogs and cats, 301.  
 Cyrus suckled by bitch, 206.  
 Cysticerci in intestines, 244.  
 DAMASCUS, false prophecy on, 52.  
 Damasus (Pope), his advice to Jerome, 8.  
 Dana, Prof., origin of glacial epoch, ii. 32.  
 — on New Zealand crustacea, 292.  
 Daniel's prophecy unfulfilled, 52.  
 Daphne, myth of, 81.  
 Darwin, George, calculation of molecules, ii. 117.  
 Darwin, C. R., his account of Patagonians, 90.  
 — on evolution, 241.  
 — birth of species, 249.  
 — origin of varieties, 253.  
 — his discovery, 257.  
 — does not deal with beginnings of life, 260.  
 — anticipated by Owen, 261.  
 — modification of characters, 286.  
 — on adornment in animals, 289.  
 — in flowers, 289.  
 — on natural selection, 291.  
 — on imperfection of record, 293.  
 — on periods of elevation and depression, 295.  
 — does not avail himself of geological oscillations, 297.  
 — on Weald of Kent, ii. 19.  
 — variation induces variation, ii. 35.  
 — *natura non facit saltum*, ii. 38.

- Darwin, description of, ii. 41.  
 — on mental nature of man, ii. 50.  
 — on moral nature of man, ii. 55.  
 — right and wrong, ii. 77.  
 — valour in a monkey, ii. 78.  
 — on transmission, ii. 89.  
 — formerly underrated importance of modifications, ii. 93.  
 — his theory of natural selection, ii. 100.  
 — on cell theory, ii. 104, 107.  
 Darwinism supposed to be comprehended by every educated person, ii. 39.  
 Davids, Rhys, on Buddha, 214.  
 Davidson, his labours, 6, 189.  
 — on St. Mark, 191, 192.  
 — on fourth Gospel, 194.  
 Dawkins, W. Boyd, on Miocene, ii. 3.  
 — on animals in Pleistocene, ii. 7.  
 — on Eocene, ii. 9.  
 — on Pliocene skulls, ii. 10.  
 — on Pleistocene mammals, ii. 12.  
 Dawn, myth of, 81.  
 Dead, resurrection of, 155.  
 Decisions depend upon ideas, ii. 266.  
 Degeneration, belief in, 67.  
 Deipara, Virgo, in China, 206.  
 Delitsch, Dr., his opinion on Deuteronomy, 28, 30.  
 Deluge, traditions of, 135.  
 De Maistre on degeneration, 67.  
 Demokritos, atomic theory of, ii. 171.  
 Descartes, reviver of ontological school, ii. 128.  
 — not an atheist, ii. 165.  
 — brutes automata, ii. 200.  
 — his ontology, ii. 258.  
 — *a priori* contribution of mind, ii. 276.  
 — explanation of thought and feeling, ii. 279.  
 — how truths of mathematics are reached, ii. 312.  
 Descent theory verified by comparative anatomy and palæontology, 279.  
 — of Jesus at baptism, 185.  
 Desdout's criticism of Kant, ii. 299.  
 Design argument, 223.  
 Determinists, ii. 246.  
 Deucalion, deluge of, 138.  
 Deuteronomy, record of, 13.  
 De Wette, his labours, 6.  
 — quoted, 189.  
 Devil, Christian, 154.  
 Diognetus not noticeable, 201.  
 Dioptric structures in eye, ii. 42.  
 Divinity annulled by discovery of cell theory, ii. 39.  
 Domestication a test of hybridity, 299.  
 Dove, its departure, 27.  
 Du Bois-Reymond, his system, 263 ; ii. 125.  
 — mechanical explanation of consciousness inconceivable, ii. 167.  
 Duty, Cousin on, ii. 73.  
 Dyaus, meaning of, 78.  
 EARTHQUAKE at Crucifixion, 209.  
 Edom wasted by Joab, 39.  
 Egypt, gods of, 131.  
 Egyptian gods born of virgins, 205.  
 Eichhorn, his labours, 6.  
 El, worship of, 162.  
 Eleutherus, Roman bishop, 196.  
 Elijah's slaughter of priests at Mount Kishon, 42.  
 Eliot, George, preparation for sudden deeds, ii. 254.  
 Elisha going to Beth-el, 41.  
 Eliûn, a Phœnician god, 162.  
 Elohim, name of, 160.  
 Elohistic record, 24.  
 Empedokles' trial of all possible combinations, ii. 119.  
 Empiricists, ii. 267.  
 Eocene, description of, ii. 2.  
 Ephraem Syrus quoted, 195.  
 Epicurus, doctrine of, ii. 66.  
 — right and wrong, ii. 76.  
 — on doctrine of intelligence, 233.  
 — age, ii. 8.  
 Essene teaching, 215.  
 Essenes on ceremonies, 218.  
 Eusebius, 187.  
 — quoted, 189.  
 — on Hegesippus, 196.  
 Evans, Dr. John, on Arezzo find, ii. 10.  
 Eve, creation of, 48.  
 Evil, existence of, 237.  
 Evolution, on an unsupported tortoise, ii. 175.

- Evolution, theory of, 241.  
 — definition of, 242.  
 — point of departure, 243.  
 — affirmation of doctrine, 243.  
 — advocated by Treviranus, 255.  
 — stock arguments discussed, 289.  
 — objections to, 290.  
 Ewald, his labours, 6.  
 — distribution of Pentateuch into authors, 32.  
 — on Japheth, 140.  
 — Dr., on name Elohim, 160, 161.  
 Exaltation, morbid, produced by fasting, 50.  
 Existence of God, ii. 145.  
 Eye, description of, ii. 41.  
 — on plucking out, 207.  
 Ezra, his return to Judea, 13.
- FATHER of people, 57.  
 Fichte, absolute idealism, ii. 277.  
 — extreme form of idealism, ii. 223.  
 Firm idea of God, 79.  
 First cause, no experimental proof of, 45.  
 Fisher, Kuno, "History of Modern Philosophy," ii. 299.  
 Flint implements found in ancient strata, ii. 10.  
 Flint, Prof., "Theism," 229.  
 Flood, its duration, 26, 27.  
 — preparation for, 26.  
 Flourens' experiment, ii. 210.  
 Foraminifera, Carpenter on, 253.  
 Forbes, David, ice-action in Cordilleras, 297.  
 Force, persistent, ii. 180.  
 Foreknowledge, yearning after, 51.  
 Foucaux on Buddha, 205.  
 — on Buddhism, 297.  
 Foundation of morals, ii. 145.  
 Fowls, breeding of, 285.  
 Freedom of will, ii. 145.  
 French sergeant wounded at Bazailles, ii. 211.  
 Frog, experiments on, ii. 211, 214.
- GALLUS Bankiva, 285.  
 Gassendi on adaptation, 234.  
 — not an atheist, ii. 165.  
 Gastaldi, Prof., on Miocene, ii. 3.  
 Gaudry, M., his palæontological discoveries, 282.
- Geikie, Prof. Archibald, on glacial period, ii. 5.  
 — Dr. James, on palæolithic man, ii. 13.  
 — on geological time, ii. 24.  
 — river experiments, ii. 26.  
 Geoffroy St. Hilaire, his system, 251, 254.  
 Geographical distribution of plants and animals, 284.  
 Geological classification, ii. 1.  
 — time, ii. 23.  
 Geneva Bible, 6.  
 Germinal cells, 275.  
 Ghosts, belief in, 73.  
 Gibbon on darkness at crucifixion, 209.  
 — immortality, 134.  
 Gibeonites slain by Saul, 39.  
 Gilmour, Rev. J., on China, 207.  
 Giraffe, how its neck was lengthened, 259.  
 God, difference in his name, 24.  
 — existence of, 13.  
 — names of, 159.  
 — existence of, 168.  
 — three ways of proving existence, 223.  
 — intuitive belief in, ii. 53.  
 Gods of Egypt, 131.  
 Goethe, J. W., his system, 253.  
 — on cell theory, 273.  
 — aversion from distress, ii. 81.  
 — matter cannot exist without mind, ii. 188.  
 Gospels not canonised till second century, 182.  
 — absence of, 203.  
 Gradations between horse and tapir, 281.  
 Gray, Asa, letter to, by Darwin, 258.  
 Greek versions of Bible, 8.  
 — notions of deluge, 136, 138.  
 Green, T. H., introduction to Hume's treatise, ii. 162.  
 Grote, Mr., on legendary Greece, 97.  
 Grotius right and wrong, ii. 79.  
 Grove, Sir W. R., dynamical action subtracted from universe, ii. 170.  
 Gulf Stream, ii. 30.
- HÄCKEL, letter to, by Darwin, 258.  
 — his opinion on life, 266.  
 — on creation, 272.  
 — on monera, 272.  
 — on cell theory, 274.

- Häckel on descent of vertebrata, 294.  
 — on fruitful hybrids, 299.  
 — on natural selection, ii. 18, 99.  
 — definition of cell theory, ii. 39.  
 — on heredity, ii. 107.  
 — explanation of heredity, ii. 109.  
 — on sensation, ii. 148.  
 — condemnation of dualism, ii. 186.
- Hall, Robert, operation of conscience, ii. 64.
- Ham, name of, 119.
- Hamilton, Sir W., representative theory, ii. 217.  
 — on theories of causation, ii. 230.  
 — on theism, ii. 230.  
 — an advocate of introspective method, ii. 262.  
 — not a thoroughgoing *à priorist*, ii. 262.
- Hamy on Eocene, ii. 9.
- Hardwick, Archdeacon, Chinese ideas of God, 79.
- Haug, Dr., on Zoroaster, 109.  
 — date of Zoroaster, 105.  
 — on resurrection, 155.
- Haughton, Prof., thickness of stratified rocks, ii. 25.
- Heart's action adjusts itself, ii. 251.
- Heat a cause of vital change, 240.
- Hebrew text of Bible, 6.  
 — a dead language 400 B.C., 10.  
 — separated from other nations, 23.  
 — idea of immortality, 155.  
 — religion, no exceptional claims to reverence in, 165.
- Hegel, identity of contradictories, ii. 277.
- Hegesippus, evidence of, 182, 185, 187.  
 — does not mention any Gospel, 196.  
 — silence of, 197.
- Hell, Christian, 154.
- Helmholtz, specific action of nerves, ii. 219.  
 — true regard for condensation, ii. 22.  
 — sudden shock to earth, ii. 172.  
 — his relativism, ii. 309.
- Helvetius right and wrong, ii. 76.
- Heraklitus despises all non-sensual knowledge, ii. 127.
- Herbert, J. M., modern realism examined, ii. 162, 168.  
 — scientific aspect of matter and force, ii. 180.  
 — his explanation of realism, ii. 192.  
 — his criticism on thought as an operation of energy, ii. 201.  
 — states of consciousness regular effects of physical antecedents, ii. 203.  
 — failures consequent on realistic method, ii. 207.
- Heredity or transmission, ii. 89.
- Herodotus, story of Io, 94.
- Herschel, John, eccentricity of earth, ii. 28.  
 — on influence of sun's rays, ii. 21.  
 — on miracles, 176.  
 — on adaptation, 235.
- Hesperornis (a fossil bird), 280.
- Heterogenesis not a canon of Darwinism, 249, 269.
- Hilaire, Barthélemy St., on Buddhism, 212.
- Hilkiah's discovery, 19.
- Hindu notions of deluge, 139.
- Hobbes, doctrine of, ii. 66.  
 — self-immolators, ii. 80.  
 — a sensationalist, ii. 130.
- Hodgson, B. H., Nepal and Thibet, 211.
- Holtzmann on St. Matthew, 90.
- Homer, benefit of his works, ii. 123.
- Hooker, Sir J., no new orders of plants, 280.
- Horses, striped, 285.
- Huc on Buddhism and Christianity, 210.
- Humboldt, Alex. von, on region of Parime, 295.
- Hume, argument of, 169.  
 — on design, 226.  
 — persistence of force, 231.  
 — on creative power, 239.  
 — on "First Principles," 241.  
 — on utility, ii. 68.  
 — trial of all possible combinations, ii. 119.  
 — influence on theology, ii. 225.  
 — influence on modern theology, ii. 225.  
 — his reasoning contradictory, ii. 229.

- Hume, theory of causation by experience, ii. 232.  
 — principles of causation, ii. 240.  
 — scepticism of, ii. 260.  
 — doctrine of causation, ii. 279.  
 — force of habit, ii. 307.  
 — his system, ii. 309 *et seq.*  
 Hutton, his system, 251.  
 Huxley, T. H., on evolution, 241.  
 — no new classes of fossil animals, 280.  
 — on pelvis of chick, 281.  
 — on pelvis of ornithoscelidan, 281.  
 — on walrus in Cromer forest, 297.  
 — on persistent types of life, 300.  
 — importance of time question, ii. 35.  
 — time for natural selection, ii. 36.  
 — eyes of cuttlefish and vertebrates, ii. 44.  
 — continuous evolution, ii. 93.  
 — on Mivart's views, ii. 96.  
 — primordial molecular arrangement, ii. 119.  
 — on problems of molecular physics, ii. 169.  
 — neither a materialist nor an atheist, ii. 186.  
 — quoted by Herbert, ii. 194.  
 — electric force and light waves, ii. 203.  
 — converts animals into automata, ii. 205.  
 — impossible to prove consciousness, ii. 208.  
 — explanation of molecular changes, ii. 213.  
 — his relativism on, ii. 309.
- ICHTHYORNIS (a fossil bird), 280.  
 Idealism, its result, ii. 206.  
 Ignatius of Antioch, evidence of, 182.  
 — his epistles unimportant, 199.  
 Ignorance of Jewish people, 51.  
 Immanuel, prophecy regarding, 55.  
 Immortality, Hebrew idea of, 155.  
 Imperfection a cause of evil, 239.  
 — of record, 293.  
 Innate ideas, Locke on, ii. 131.  
 Insanity of idealism, ii. 250.  
 Instinct in ants and bees, ii. 45.  
 Intellectual faculties, ii. 53.  
 Iran, definition of, 103.  
 Irenæus quoted, 189.  
 — time of, 182, 191.  
 Irving, Washington, on Mahomet, 205.  
 Isaiah vii. 14, interpretation, 54.  
 — ix. 6, interpretation, 56.  
 — liii. interpretation, 60.  
 Isis, cultus of, 93.  
 Israelite God, 163.  
 Izdubar epic, 124.  
 — legend, 147.
- JACOB, his deceitful conduct, 35.  
 Jael, her murder of Sisera, 37.  
 James I.'s Bible, 6.  
 Jehoash, sacrifices under, 21.  
 Jehoshaphat at Ramoth Gilead, 40.  
 Jehovah, unworthy conceptions of, 36.  
 — hardens heart of Pharaoh, 40.  
 Jehovistic record, 24.  
 Jehu's massacre of prophets, 41.  
 Jellyfish, its progeny, ii. 106.  
 Jephthah's offering of daughter, 20.  
 Jeremiah on sacrifice, 21.  
 — xxii., interpretation, 59.  
 Jerome, St., his version of canon, 7.  
 — quoted, 189.  
 — on Plato, 205.  
 Jesuit rule, ii. 61.  
 Jesus as a thaumaturgist, 179.  
 — descent at his baptism, 186.  
 — inculcates purity of heart, 211.  
 — teaches fundamental equality, 213.  
 Jewish tradition of Messiah, 53.  
 Jews of Alexandria absorbed in Platonic philosophy, 216.  
 John, St., Gospel of, 193.  
 — his Gospel not in existence in first century and half, 201.  
 John the Baptist, immediate antecedent of Christianity, 219.  
 Jonah in whale's belly, 35.  
 Jones, Sir W., on deluge, 139.  
 Josephus, his account of Septuagint, 10.  
 — his catalogue of sacred books, 12.  
 Josiah, King, his reign, 19.  
 — persecution of wizards, 41.  
 Jukes, Prof., on Weald of Kent, ii. 19.  
 Julien, Stanislaus, on Laou-tzse, 205.

- Justin Martyr on Abishag, 61.  
 — quoted, 182, 184, 206.  
 — on fourth Gospel, 193.
- KALISCH, Prof., on Paradise, 151.
- Kant, Emmanuel, methods of proving existence of God, 223.  
 — on first principles, 241.  
 — philosophy of, 294 *et seq.*  
 — prudence and duty, ii. 73.  
 — a future, ii. 117.  
 — quoted, ii. 121, 124.  
 — on common sense in philosophy, ii. 153.  
 — atomic theory of, ii. 171.  
 — as leader to Coleridge, ii. 260.  
 — his critical philosophy, ii. 279.  
 — immediate consciousness of existence of external things, ii. 303.
- Keil, Dr., his opinion on Genesis, 28.
- King's evil, touching for, 208.
- Koch, Dr., of Berlin, on germs in air, 271.
- Körös, Csoma de, on Buddhism, 214.
- LAGARDE, interpretation of prophecy on Shiloh, 62.
- Lamarck, his system, 251.  
 — Cuvier's opposition to his doctrine, 300.
- Lancelet, not connected with mollusks, 295.
- Lange, "History of Materialism," 224; ii. 123.  
 — death of, ii. 168.  
 — his opinion, ii. 249.  
 — his relativism, ii. 309.  
 — his system, ii. 311 *et seq.*
- Language a particular form of myth, 89.  
 — evidence from, 103.  
 — a key to origin of prehistoric man, 118.
- Laou-tzse born of a virgin, 205.
- Laplace on analogy, 226, 230.  
 — on a future, ii. 118.  
 — atomic theory of, ii. 171.
- Lassen, Prof., derivation of Deva, 95.  
 — on Buddha, 205.
- Latin versions of Bible, 8.
- Law read in public worship, 13.
- Law, the, unknown to early Jews, 19.
- Layard, Sir A., buried palaces at Kouyunjik, 146.
- Lecky, Mr., in favour of intuitionists, ii. 65.
- Leibnitz on cognisance of innate truth, ii. 131.  
 — internal experience of existence of God, ii. 235.  
 — mind primarily passive, ii. 151.  
 — test of necessity and universality, ii. 259.  
 — *à priori* contribution of mind, ii. 276.
- Lenormant, M., on Pandora myth, 152.  
 — on Aryan migrations, 108.  
 — his derivation of word Ararat, 115.  
 — on God, 163.
- Lepsius, Dr., quoted, 121, 128.
- Leuwenhoek, drop of stagnant water, 267.
- Leverrier, M., eccentricity of earth's orbit, ii. 31.
- Levita, famous Hebrew scholar, 11.
- Lewes, G. H., 99.  
 — his opinion on life, 266.  
 — ontological school, ii. 128, 130.  
 — a thing is what it does, ii. 182.  
 — "Problems of Life and Mind," ii. 209.  
 — a foe of introspective school, ii. 271.
- Life, organ of, 263.
- Light a cause of vital change, 247.
- Lightfoot, his labours, 6.  
 — Bishop, on statement of Papias, 191.
- Lillie on Buddha, 205.  
 — on Buddhism, 207, 214.  
 — on Buddhism and Christianity, 211.
- Limits of variability, 298.
- Links newly discovered, 296.
- Lister, Sir Joseph, on germs in air, 270.
- Literal sense of Scripture, 45.
- Livingstone, Dr., in a lion's jaws, 240.
- Localisation of cerebral diseases, ii. 251.
- Locke on good and evil, ii. 57.

- Locke on cognisance of innate truth, ii. 131.  
 — mind without ideas, ii. 133.  
 — on sensation, ii. 133.  
 — on simple and complex ideas, ii. 134.  
 — on substance, ii. 135.  
 — on infinity, ii. 135.  
 — on power, ii. 135.  
 — on freedom of will, ii. 135.  
 — on liberty, ii. 136.  
 — on necessity, ii. 136.  
 — on what determines will, ii. 136.  
 — on corporeal substance, ii. 136.  
 — on mind, ii. 136.  
 — on idea of God, ii. 136.  
 — on moral relations, ii. 138.  
 — on primary and secondary qualities, ii. 139.  
 — on real and fantastical ideas, ii. 139.  
 — on knowledge limited to ideas, ii. 140.  
 — on idealism, ii. 141.  
 — on mathematical knowledge, ii. 141.  
 — maxims and axioms not innate, ii. 142.  
 — trifling propositions, ii. 142.  
 — knowledge of existence, ii. 142.  
 — existence of a God, ii. 142.  
 — is matter coeternal? ii. 143.  
 — existence of other things, ii. 143.  
 — relativity of knowledge, ii. 143.  
 — on sensation, ii. 148.  
 — on solidity, ii. 158.  
 — theory of perception, ii. 159.  
 — analysed by T. H. Green, ii. 163.  
 — motion continued to brain, ii. 219.  
 — influence on philosophy, ii. 225.  
 — on Berkeley's proof of being of God, ii. 228.  
 — his sensationalism accepted by Hume, ii. 233.  
 — motive for continuance, ii. 248.  
 — arbitrary distinction of mental powers, ii. 261.
- Locke, his sensualisation of conceptions of understanding, ii. 281.  
 — his appeal to sensation, ii. 298.  
 Λογος of Papias, 189.  
 Logos as old as Plato, 206.  
 Lohle, M., on Wanger deposits, ii. 14.  
 Lubbock, Sir John, on death of animals, ii. 8.  
 — on working ants, ii. 47.  
 — inability to count numbers, 51.  
 Lücke quoted, 189.  
 Lucretius repudiates doctrine of intelligence, 233.  
 Luke, St., Gospel of, 192.  
 Lungs in cowfish, 284.  
 Luthardt on Polycarp, 200.  
 Luzatto, date of vowels, 11.  
 Lyell, Sir Charles, invents terms Eocene, Miocene, and Pliocene, ii. 2.  
 — on Mississippi, 137.  
 — on growth of peat, 295.  
 — effects of subsidence, ii. 6.  
 — description of Pleistocene mammals, ii. 11.  
 — on Weald of Kent, ii. 19.  
 — on geological line, ii. 23.  
 — on climatic variations, ii. 27.  
 — deflection of ocean currents, ii. 28.  
 — on eccentricity, ii. 34.  
 — on time question, ii. 37.
- MACNAMARA, Dr., operation at Westminster Hospital, ii. 114.  
 M'Cosh, Dr., on miracles, 176.  
 — on theism, 230.  
 — mind a self-acting substance, ii. 244.  
 — "Method of Divine Government," ii. 259.  
 Mahaffy, J. P., on Kantian philosophy, ii. 288.  
 Mahomet, birth of, 205.  
 Malacca, Straits of, differences in faunas, 282.  
 Malebranche, God produces sensations, ii. 200.  
 — on veracity of God, ii. 228.  
 Maltese couple, ii. 91.  
 Mandeville, right and wrong, ii. 76.  
 Manetho, date of, 129.  
 Manes, worship of, 88.

- Manoah's sacrifice to God, 19.  
 Mansel, right and wrong, ii. 74.  
     247.  
     — on freedom of will, ii. 245.  
 Mark, St., Gospel of, 191.  
 Maspero, Dr., quoted, 122.  
 Materialist, ordinary assumption of,  
     ii. 199.  
 Matter indestructible, ii. 180.  
 Maudsley, gap between nerve-  
     elements and mind, ii. 148.  
     — explanation of molecular  
     changes, ii. 215.  
 Maupertius, brains of Patagonian  
     giants, ii. 167.  
 Maxwell, J. Clark, "Matter and  
     Motion," ii. 185.  
     — transmission of energy, ii.  
     189.  
 Mechanism, complicated, a cause of  
     evil, 239.  
 Megadactylus probyzelus, ii. 49.  
 Meiklejohn, his translation of the  
     "Kritik," ii.  
 Memphis, picture of, 129.  
 Menes, epoch of, 128.  
 Mentalists, ii. 267.  
 Mental nature of man, ii. 50.  
 Menu, laws of, 96.  
 Mephistopheles and pentagram, ii.  
     207.  
 Mesnet, Dr., description of case, ii.  
     212.  
 Messiah, foretelling of, 57.  
     — sufferings of, 61.  
     — expected to work miracles,  
     179.  
 Metaphysical theology, 13.  
 Mettrie, De la, "L'Homme Ma-  
     chine," ii. 130.  
 Mexican tradition of deluge, 138.  
 Midianites, spoiling of them, 38.  
 Midwives, Hebrew, orders to, 6.  
 Milman's "History of Christianity,"  
     215.  
     — on Simon Magus, 218.  
 Mill, James, object of pity, ii. 81.  
 Mill, John S., on miracles, 177.  
     — on teleology, 225.  
     — on theism, 238.  
     — on moral faculties, ii. 56.  
     — prudence and duty, ii. 73.  
     — prior inexplicables, ii. 173.  
     — difficulty in conception, ii.  
     221.  
     — his "Logic," ii. 239.  
 Mill, formation of man's character,  
     ii. 255.  
     — his chapters on necessary  
     truths, ii. 265.  
 Mimicry, instances adduced of, ii.  
     47.  
     — principle of, 259.  
     — Mr. Bates on, 287.  
 Miocene, description of, ii. 2.  
 Miracles, Hebrew, 34.  
     — Hume on, 171.  
 Mivart, Prof. St. George, strictures  
     on natural selection, 290.  
     — on genera far apart, 292.  
     — geographical distribution, 297.  
     — his Centetes and pleurodont  
     lizard, 297.  
     — on ganoid fishes, 301.  
     — on indefinite variation, ii. 18.  
     — high forms in old rocks, ii. 35.  
     — eyes of cuttlefish and verte-  
     brates, ii. 44.  
     — on moral nature of man, ii.  
     54.  
     — self-immolators, ii. 80.  
     — on natural selection, ii. 95.  
 Moab smitten by David, 38.  
 Moabite god, 164.  
 Mobility of organic matter, 245.  
 Molech, a god, 24.  
 Moleschott on adaptation, 234.  
 Monera, 277.  
     — Prof. Hæckel's theory on,  
     272.  
 Monism, Clifford and Hæckel resort  
     to, ii, 198.  
 Monotheism of Hebrews, 66.  
 Moral faculties, ii. 53.  
     — sense on utilitarianism, ii.  
     57.  
 Mortillet, Gabriel de, ii. 2.  
     — on Eocene, ii. 9.  
 Moses author of Pentateuch, 12.  
     — breaks the tables, 29.  
 Motives, right and wrong, ii. 75.  
 Movers, Dr., on Arab hell, 155.  
 Mozley, Dr., on miracles, 174.  
 Müller, Max, 43.  
     — definition of idea of God, 47.  
     — his opinion, 75, 80.  
     — on deluge, 139.  
     — on name Eloah, 162.  
     — on plucking out eye, 207.  
     — on Christian moral code, 212.  
     — Otfried, "Scientific Mytholo-  
     gy," 203.

- Müller, Johannes, his experiments, ii. 219.
- Murchison, Sir R., dogmatic assertions of, 296.
- Murphy, Mr., "Habit and Intelligence," 290.
- eyes of cuttlefish and vertebrates, ii. 45.
- on bees, ii. 46.
- on dorsal groove, ii. 48.
- Mutability of species, 298.
- Myth, development of, 87.
- Mythology, comparative, 128.
- of old religions, 203.
- NATURAL selection unconnected with lapse of time, ii. 36.
- theology, 13.
- — — weight of evidence in favour of, 290.
- Naulette jaw, 285.
- Nebular hypothesis, ii. 21, 174.
- Needham's test for infusions, 267.
- Nehemiah, description of Jews, 10.
- epoch of books of Moses, 19.
- Nerve-force a phenomenon of life, 248.
- Newman, Prof. F. W., theory of miracles, 175.
- existence of gravitation, ii. 177.
- Newton, discovery of universal gravitation, ii. 171.
- theory of miracles, 175.
- New Testament, 167.
- Nirvana, meaning of term, 215.
- Noah, his flood, 26.
- Nolen, criticism of Kant, ii. 299.
- Nordenskjöld, Prof., polar lands show no trace of glaciation, ii. 33.
- Noumena, ii. 269.
- OBLIVISCENCE, law of, ii. 270.
- Odessa, manuscript of, 16.
- Oken, his system, 253.
- his opinion of life, 266.
- Old Testament version, 6.
- Omnipotence of Creator, 237.
- Ontogenesis, 278.
- Ontological proof, 223.
- Oppert, Prof., of Berlin, on Assyrian chronology, 125.
- Orbit of sun, eccentricity of, ii. 30.
- Orchids, fertilisation of, ii. 43.
- Order and symmetry in Nature, 236.
- Origen on exhibition by Satan, 64.
- quoted, 189.
- Origin of knowledge, ii. 145.
- Orohippus (a fossil horse), 281.
- Owen, Sir Richard, his work on comparative anatomy, 260.
- spermatic virtue, ii. 106.
- parthenogenesis, ii. 114.
- PALEY on design argument, 226.
- "Natural Theology," 240.
- prospective contrivances, ii. 48.
- Pamphylian Sea, stands up, 35.
- Pandora myth, 152.
- Pangensis, ii. 109.
- Pantheism, 74.
- Papias, evidence of, 182, 188.
- on oracles, 190.
- on fourth Gospel, 199.
- Paradise, account of, 151.
- Parmenides, no faith in sense-knowledge, ii. 126.
- Parsees, sacred writings of, 76.
- Parthenogenesis, ii. 106.
- Pasteur on spontaneous generation, 267, 271.
- Patrick, Bishop, 32.
- Patriotism of Philistines, 37.
- Paulus, his labours, 6.
- Pechito (Syriac) version of Bible, 9.
- Pentateuch written on skins, 15.
- Jewish conception of, 24.
- Persian Magi, their account of creation, 34.
- notions of deluge, 137.
- Pflüger, experiments of, ii. 211, 214.
- Phenomena, their condition specified, ii. 269.
- Philo-Judæus unacquainted with Hebrew, 9.
- Philological witnesses to Bible, 48.
- Philistines, patriotism of, 37.
- Philistine god, 164.
- Philosophy, ii. 127.
- Philo on order of natural beings, 236.
- on suffering in animals, 240.
- Phœnician idea of monotheism, 157.
- Physico-theological proof, 223.
- Physicus, final mystery of things, ii. 167.
- primary qualities of matter, ii. 169.
- existence of God, ii. 176.
- Pietet, Prof., proportions of fossil genera, 280.
- Pigeons, breeding of, 285.
- Plato, quotation from Timæus, 50.
- held doctrine of innate ideas from Idealists, ii. 129.

- Plato, birth of, 205.  
 — his ontology, ii. 258.
- Pleistocene, description of, ii. 5.  
 — age, ii. 11.
- Pleroma, the, 217.
- Pliny, Elder, says nothing of darkness at Crucifixion, 210.
- Pliocene, description of, ii. 4.
- Pneumatic bones, ii. 49.
- Polycarp, evidence of, 182.  
 — his Epistle doubtful, 199.
- Polytheism, 74.  
 — origin of, 84.
- Positivism, ii. 125.
- Pouchet on spontaneous generation, 267.
- Pouillet, M., on influence of sun's rays, ii. 21.
- Powell, Baden, unity of worlds, 229.  
 — on adaptation, 234.  
 — relation between effect and cause, ii. 235.
- Prehistoric man, language on, 118.
- Prophecy, fulfilment of, 49.
- Prophet, vocation of, 49.
- Propitiatory sacrifice, prophets' attack on, 63.
- Protoplasm, definition of, 264.
- Prudence, Cousin on, ii. 73.
- Psalms, authorship of, 12.
- Psalm xxii., interpretation, 59.  
 — lxxii., interpretation, 59.  
 — ex., interpretation, 62.
- Psychological doctrine tabulated, ii. 269.
- Ptah, Egyptian god, 129.
- Ptolemy I., his capture of Jerusalem, 9.
- Ptolemy Philadelphus orders translation of Pentateuch, 10.
- Puranas, legends in, 101.
- Purse of gold at Charing Cross, ii. 238.
- Pyramids, when built, 129.
- Pythagoras, his conception of God, 98.
- QUATREFAGES on hybrids of certain moths, 299.
- RABBINICAL authority, 15.
- Rahab lies to people of Jericho, ii. 60.
- Ramsay, Sir A. C., on time for denudation, ii. 19.
- Ramsay, thickness of stratified rocks, ii. 25.  
 — finds shells at Snowdon, 294.
- Raphael, benefit of his works, ii. 123.
- Rassam, Hormuzd, buried palaces at Kouyunjik, 146.
- Rational theology, 13.  
 — on miracles, 174.
- Rawlinson, Sir H., story of, 10, 94.  
 — Hamites of Egypt, 112.  
 — quoted, 124.  
 — on creation tablets, 146.
- Rawlinson, Canon, development of Semitism, 117.  
 — early source of Babylonians, 121.
- Realism, introduction to, ii. 132.
- Reid's common sense, ii. 298.
- Relativity of knowledge, ii. 127.
- Religions, development of, 111.
- Renan on Jesus' belief in miracles, 179.  
 — his labours, 6.  
 — on name Eloah, 160.
- Resurrection of Christ, 154.  
 — a Zoroastrian idea, 155.
- Revelation, a miraculous communication from God to man, 13.
- Ribot on Kantian doctrine, ii. 301.
- Righteous teaching of Bible, 43.
- Robinet on sensation, ii. 148.  
 — his opinion on cause, ii. 189.
- Romulus suckled by wolf, 206.
- Roth, Prof., of Tübingen, 76.
- Row, Canon, on miracles, 168.
- SACRIFICE, Jehovah's words on, 21.
- Sacrifices of children, 157.
- Sacrilege to ark, 40.
- Sakya Muni, teaching of, 214.
- Samoyed idea of God, 79.
- Sardanapalus, date of, 146.
- Satavanha saved by lioness, 206.
- Saul's sacrifice at Gilgal, 21.
- Sayce, Prof., on siege of Erech, 124.  
 — quoted, 125.  
 — on deluge, 140.  
 — on creation tablets, 147.
- Schaka, of Thibet, born of virgin, 205.
- Schleiden and Schwann on cell theory, 273.
- Schleiermacher, 189.
- Schopenhauer quoted, ii. 121, 125.

- Schopenhauer, all movement implies effort, ii. 199.  
 — argument on free will, ii. 241.  
 — quotes Bichat, ii. 252.  
 — fixation of Kantian doctrine, ii. 300.  
 Sedgwick, Prof., dogmatic assertions of, 296.  
 Segmentation cavity, 276.  
 Selection of Biblical works, 65.  
 Seneca says nothing of darkness at Crucifixion, 209.  
 Sennacherib, date of, 146.  
 Sensation, Locke on, ii. 155.  
 Sensationalism, exposition by Locke, ii. 132.  
 Septuagint version of Bible, 8.  
 Sermon on the mount, 186.  
 Serpent in Paradise, 153.  
 Serpent and rod miracle, 34.  
 Servant, law on flogging of, 42.  
 Sidgwick, right and wrong, ii. 77.  
 — on determinism, ii. 245.  
 Simeon, Rabbi, his opinion, 13.  
 Simon Magus, an early convert, 218.  
 Sisera, his flight and murder, 36.  
 Skertchley, Mr., on Pleistocene mammals, ii. 13.  
 Sky, worship of, 78.  
 Smith, Adam, on self-immolators, ii. 80.  
 — George, on Assyrian chronology, 125.  
 — on deluge, 140.  
 — on creation tablets, 146.  
 — Prof. Robertson, 15.  
 — writings of scribes, 17.  
 — on Hebrew pronunciation, 163.  
 Solomon's sacrifices, 21.  
 Song of Solomon a love-song, 64.  
 South American submergences, 137.  
 Spallanzani's test for infusions, 267.  
 Spencer, Herbert, 73.  
 — "Principles of Sociology," 82.  
 — absence of poetical element in, 85.  
 — the case against him, 90.  
 — "First Principles," 231.  
 — on evolution, 241.  
 — survival of fittest, ii. 40.  
 — "Data of Ethics," ii. 82.  
 — his theory of natural selection, ii. 101.  
 — doctrine of polarity, ii. 108.  
 Spencer, doctrine of heredity, ii. 110.  
 — realistic aspect of doctrine of innate ideas, ii. 129.  
 — on sensation, ii. 148.  
 — weakness of idealism, ii. 162.  
 — his opinion on cause, ii. 189.  
 — his doctrine has an illusory resemblance with that of Bain, ii. 197.  
 — on thought as an operator of energy, ii. 201.  
 — faces of same fact, ii. 209.  
 — realism only rational creed, ii. 221.  
 — definition of life, ii. 242.  
 — insanity of idealism, ii. 250.  
 — a foe of introspective school, ii. 271.  
 — his automatic classification, ii. 288.  
 Spiegel, Dr., on Zendavesta, 104.  
 — on Aryan migrations, 108.  
 — on creation, 142, 143.  
 — on monotheism, 156.  
 Spinoza, his ontology, ii. 259.  
 Spontaneous generation, 267.  
 Square letters, 17.  
 Sterility of species, 298.  
 Stewart, Dugald, "Philosophy of Human Mind," ii. 230.  
 — test of necessity and universality, ii. 259.  
 — properties of circle, ii. 265.  
 Stillingfleet on sensation, ii. 154.  
 Stoics, doctrine of, ii. 65.  
 Strauss, his labours, 6.  
 — "Leben Jesu," 189.  
 — quoted, 203.  
 Strumous diseases, 208.  
 Symmachus, his version of Bible, 8.  
 Sympathy a disputed principle, ii. 66.  
 Synagogue, Hebrews employed in, 11.  
 Synoptic Gospels, history of, 181.  
 TACITUS on cure by Vespasian, 209.  
 Tait on natural selection, 291;  
 ii. 16.  
 — uniformity of force, ii. 20.  
 Talmudic testimony to Old Testament, 16.  
 Tardy, flint flakes at Aurillac, ii. 9.  
 Teleological argument, 225.  
 Teleology, discussion on, ii. 50.

- Terrien de la Couperie, M., his researches, 113.  
 Text, Hebrew, of Bible, 6.  
 Theodotus, his version of Bible, 8.  
 Therapeutics practised early Christian doctrine, 217.  
 Thomson, Archbishop, on God, 168, 190, 204.  
 — on miracles, 173.  
 — Sir W., molecular structure of water, ii. 117.  
 — on cooling of masses, ii. 23.  
 Tiberius, darkness under, 209.  
 Time required for natural selection, ii. 18.  
 Tischendorf on fourth Gospel, 194.  
 Torah in one sense Mosaic, 23.  
 Tradition preceded written composition, 203.  
 Transmission or heredity, ii. 89.  
 Transcendentalism, introduction to, ii. 132.  
 Transcendental theology, ii. 123.  
 Trench, Archbishop, on miracles, 173.  
 Treviranus, advocates mechanical origin of life, 255.  
 Trinité in Egypt, 133.  
 Turanian index to origin of affinities in Babylon, 119.  
 Tylor, E. B., on fasting, 50.  
 — gods in North America, 79.  
 — on mythology, 86.  
 — notions of savages, 85, 208.  
 Tyndale, translation of Bible in 1530, 6.  
 Tyndall, Prof., on heat, ii. 21.  
 — on spontaneous generation, 268-270.  
 — quoted by Herbert, ii. 194.  
 Tyre, false prophecy on, 52.
- UEBERWEG on sensation, ii. 148.  
 — his opinion on cause, ii. 189.  
 Ullman, quoted, 189.  
 Uniformity of force, ii. 20.  
 Unity of plan of animals, 283.  
 Ur of the Chaldees, 122, 124.  
 Usertesén, obelisk of, 57.  
 Uterus, double, in women, 286.  
 Utility to mankind, ii. 68.  
 Uzza punished for supporting ark, 41.
- VARIABILITY, limits of, 298.
- Varied versions of Biblical narrative, 28, 29.  
 Varieties of speech, ii. 92.  
 Vedas, old Sanskrit, 76.  
 Vertebrata developed from vermes, 294.  
 Vespasian, cure by, 209.  
 "Vestiges of Creation," ii. 13.  
 Virchow, Prof., on cell theory, 273.  
 Virtue variable in race and station, ii. 63.  
 — love of, ii. 71.  
 Vital phenomena, their causes, 247.  
 Voltaire, on cure by Vespasian, 209.  
 — illustration of watch, 227.  
 Von Baer on segmentation cavity, 276.  
 Vulgate translation of Bible, 7.
- WALKING leaf and stick insects, 287.  
 Wallace, A. R., his discovery, 257.  
 — writes his essay, 258.  
 — writes his paper, 259.  
 — on Straits of Malacca, 283.  
 — on manatus, 283.  
 — on mimicry, 287, 288.  
 — on Miocene, ii. 3.  
 — bones in caverns, ii. 7.  
 — origin of man, ii. 9.  
 — on natural selection, ii. 17.  
 — island life, ii. 32.  
 — on eccentricity, ii. 34.  
 — on time question, ii. 37.  
 — on instinct, ii. 45.  
 — brain of savage, ii. 48.  
 — on mental faculties of man, ii. 50.  
 — language in animals, ii. 52.  
 — universe will of intelligence, ii. 189.
- Warrior, the, imaginary projection of, ii. 22.  
 Watch, illustration of, 227.  
 Waters of sea stand up, 35.  
 Whale, Jonah in his belly, 35.  
 Whately on degeneration, 67.  
 Whewell, Prof., opponent of utilitarianism, ii. 58.  
 — on *a priori* school, ii. 262.  
 — his support to *a priori* school, ii. 262.  
 Wilkinson, Sir Gardner, quoted, 120.  
 Wilson, Horace, 142.  
 Winds, impulse of, cause oceanic circulation, ii. 30.

- Wogue, Rabbi, 12, 16.  
 Woman at well, 207.  
 Wood, Searles, no glacials in Eocene, ii. 32.  
 Werner, his system, 251.  
 Westcott, Canon, his labours, 6, 182.  
 — on fourth Gospel, 193, 195, 197, 199.  
 XENOPHANES, his conception of God, 98.  
 Xisuthrus, legend of, 141.  
 YORK, Archbishop of, 168.  
 — on degeneration, 67.
- ZECCHARIAH iv. 9, interpretation, 58.  
 Zend language, 106.  
 Zoroaster, a hypothetical person, 105.  
 Zoroastrian theology, 109.  
 — older than Hebrew monotheism, 110.  
 — original home of, 114.  
 — date of introduction into Chaldaea, 116.  
 — Medes, 123.  
 — ideas of resurrection, 155.  
 — idea of Paradise, 157.  
 Zoroastrianism, primitive seat of, 101.

THE END.







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