



S
C2953m

Carpenter, Edward

Modern science and the science
of the future.



Bequeathed
to
The University of Toronto Library
by
The late Maurice Hutton,
M.A., LL.D.
Principal of University College
1901-1928

PUBLISHED
MONTHLY.

SUBSCRIPTION PRICE,
\$3.00 A YEAR.

No. 159

PRICE 15 CENTS

Sept. 15, 1891

THE
HUMBOLDT
LIBRARY OF SCIENCE

MODERN SCIENCE

— AND —

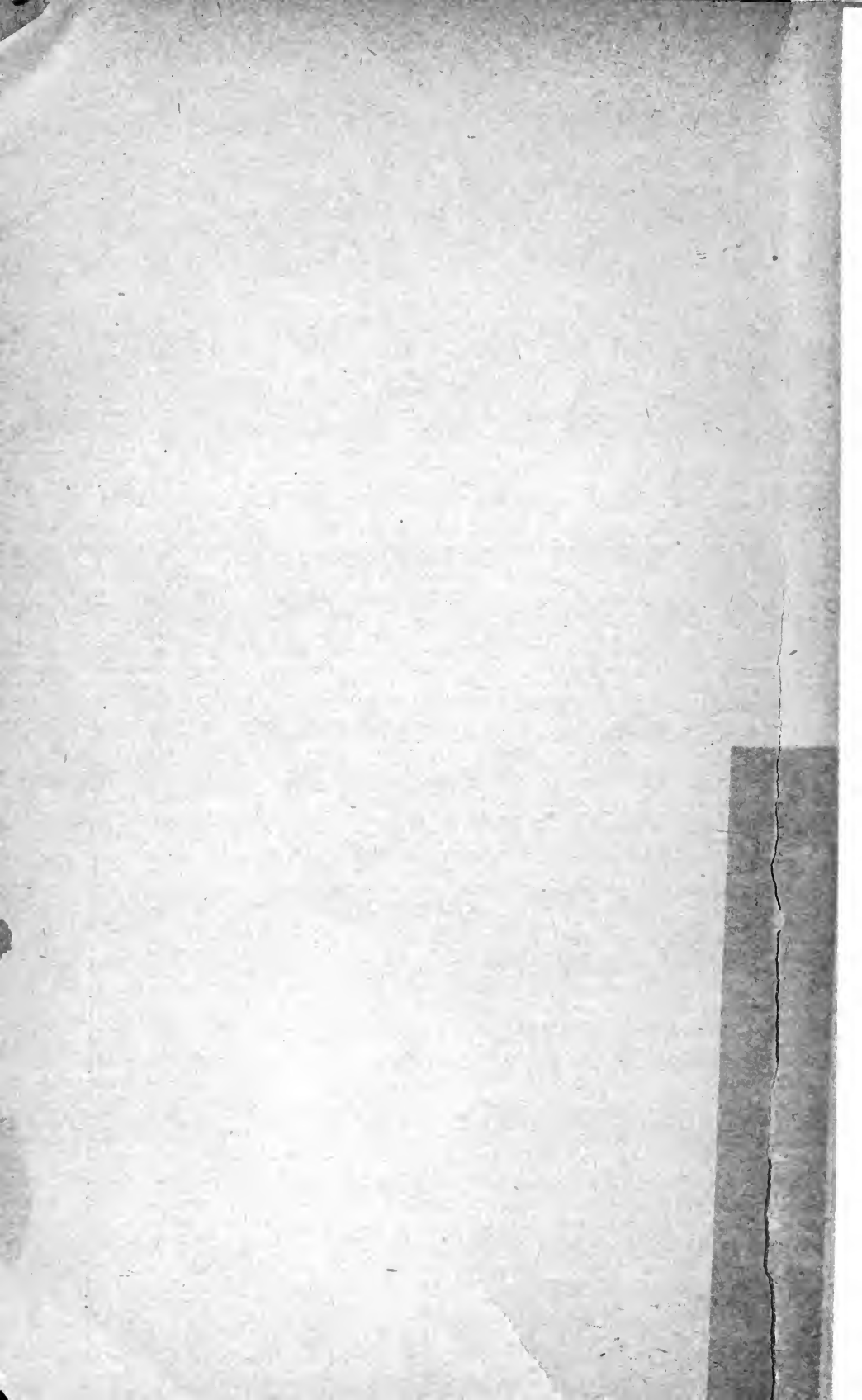
THE SCIENCE OF THE FUTURE.

BY

EDWARD CARPENTER.

NEW YORK
THE HUMBOLDT PUBLISHING COMPANY
19 ASTOR PLACE

ENTERED AT THE NEW YORK POST OFFICE AS SECOND CLASS MATTER.



S
C2953m

MODERN SCIENCE

AND THE

SCIENCE OF THE FUTURE

WITH AN ESSAY ON DEFENCE OF CRIMINALS

BY

EDWARD CARPENTER

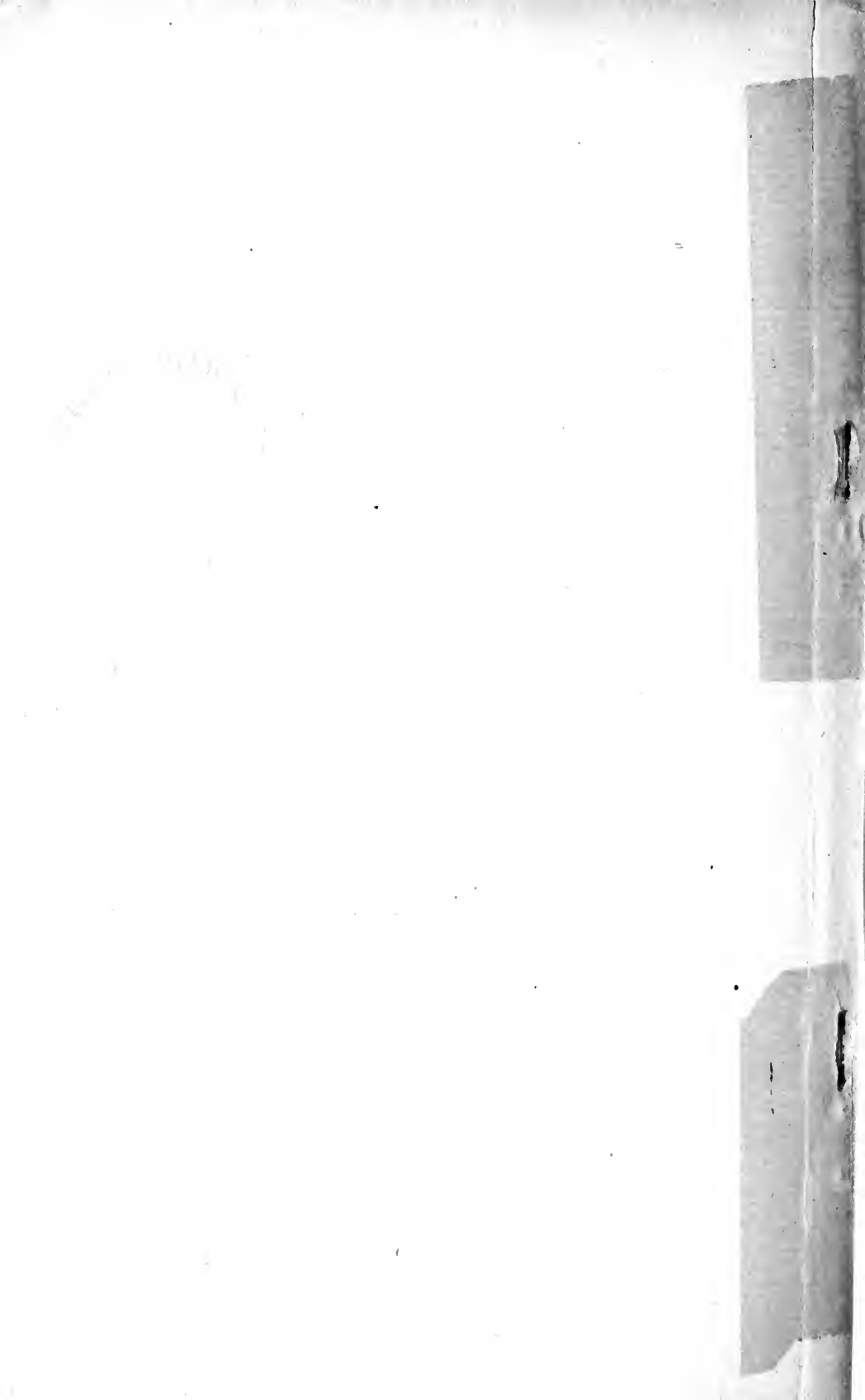


395114
18.7.41

NEW YORK

THE HUMBOLDT PUBLISHING CO.

19 ASTOR PLACE



CONTENTS.

MODERN SCIENCE : A CRITICISM,	5
THE SCIENCE OF THE FUTURE : A FORECAST,	25
DEFENCE OF CRIMINALS : A CRITICISM OF MORALITY,	36

Digitized by the Internet Archive
in 2007 with funding from
Microsoft Corporation

MODERN SCIENCE:

A CRITICISM.

παντὶ λόγῳ λόγος ἴσος ἀντικείμεται.

IT is one of the difficulties which meet anyone who suggests that modern science is not wholly satisfactory, that it is immediately assumed that the writer is covertly defending what Ingersoll calls the "rib-story," or that he wishes to restore belief in the literal inspiration of the Bible. But, religious controversy apart, and while admitting that Science has done a great work in cleaning away the kitchen-middens of superstition and opening the path to clearer and saner views of the world, it is possible—and there is already a growing feeling that way—that her positive contributions to our comprehension of the order of the universe have in late times been disappointing, and that even her methods are at fault and must lead to failure. After a glorious burst of perhaps fifty years, amid great acclamations and good hopes that the crafty old universe was going to be caught in her careful net, Science, it must be confessed, now finds herself in almost every direction in the most hopeless quandaries; and, whether the rib-story be true or not, has at any rate provided no very satisfactory substitute for it. And the reason of this failure is very obvious. It goes with a certain defect in the human mind, which, necessarily belongs to the Civilisation-period—the tendency, namely, to separate the logical and intellectual part of man from the emotional and instinctive, and to give it a *locus standi* of its own. Science has failed because she has attempted to carry out the investigation of nature from the intellectual side alone—neglecting the other constituents necessarily involved in the problem. She has failed because she has attempted an impossible task; for the discovery of a permanently valid and purely intellectual representation of the universe is simply impossible. Such a thing does not exist.

The various theories and views of nature which we hold are merely the fugitive envelopes of the successive stages of human growth—each set of theories and views belonging organically to the moral and emotional stage which has been reached, and being in some sort the expression of it; so that the attempt at any given time to set up an explanation of phenomena

which shall be valid in itself and without reference to the mental condition of those who set it up, necessarily ends in failure; and the present state of confusion and contradiction in which modern Science finds itself is merely the result of such attempt.

Of course this limitation of the validity of Science has been recognised by most of those who have thought about the matter; ¹ but it is so commonly overlooked, and latterly the notion has so far gained ground that the "laws" of science are immutable facts and eternal statements of verity, that it may be worth while to treat the subject a little more in detail.

The method of Science is the method of all mundane knowledge; it is that of limitation or actual ignorance. Placed in face of the great uncontained unity of Nature we can only deal with it in thought by selecting certain details and isolating those (either wilfully or unconsciously) from the rest. That is right enough. But in doing so—in isolating such and such details—we practically beg the question we are in search of; and, moreover, in supposing such isolation we suppose what is false, and therefore vitiate our conclusion. From these two radical defects of all intellectual inquiry we cannot escape. The views of Science are like the views of a mountain; each is only possible as long as you limit yourself to a certain standpoint. Move your position, and the view is changed.

Perhaps the word "species" will illustrate our meaning as well as any word; and, in a sense, the word is typical of the method of Science. I see a dog for the first time. It is a fox-hound. Then I see a second fox-hound, and a third and a fourth. Presently I form from these few instances a general conception of "dog." But after a time I see a greyhound and a terrier and a mastiff, and my old conception is destroyed. A new one has to be formed, and then a new one and a new one. Now I overlook the whole race of civilised dogs and am satisfied with my wisdom; but presently I come upon some wild dogs and study the habits of the wolf and the fox. Geology turns me up some links, and my conception of dog melts away like a lump of ice into surrounding water. My species exists no more. As long as I knew a few of the facts I could talk very wise about them; or if I limited myself arbitrarily, as we will say, to a study only of animals in England at the present day, I could classify them; but widen the bounds of my knowledge, the area of observation, and all my work has to be done over again. My species is not a valid fact of Nature, but a fiction arising out of my own ignorance or arbitrary isolation of the objects observed.

Or to take an instance from Astronomy. We are accustomed to say that the path of the moon is an ellipse. But this is a very loose statement. On enquiry we find that, owing to perturbations supposed to be produced by the sun, the path deviates considerably from an ellipse. In fact in strict calculations it is taken as being a certain ellipse only for an instant—the next instant it is supposed to be a portion of another ellipse.

¹ See note, p. 81.

We might then call the path an irregular curve somewhat resembling an ellipse. This is a new view. But on further enquiry it appears that, while the moon is going round the earth, the earth itself is speeding on through space about the sun—in consequence of which the actual path of the moon does not in the least resemble an ellipse! Finally the sun itself is in motion with regard to the fixed stars, and *they* are in movement too. What then is the path of the moon? No one knows; we have not the faintest idea—the word itself ceases to have any assignable meaning. It is true that if we agree to ignore the perturbations produced by the sun—as in fact we *do* ignore perturbations produced by the planets and other bodies—and if we agree to ignore the motion of the earth, and the flight of the solar system through space, and even the movement of any centre round which that may be speeding, we may then *say* that the moon moves in an ellipse. But this has obviously nothing to do with actual facts. The moon *does* not move in an ellipse—not even “relatively to the earth”—and probably never has done and never will do so. It may be a convenient view or fiction to say that it would do so under such and such circumstances—but it is still only a fiction. To attempt to isolate a small portion of the phenomena from the rest in a universe of which the *unity* is one of Science’s most cherished convictions, is obviously self-stultifying and useless.

But you say it can be proved by mathematics that the ellipse would be the path under these conditions; to which I reply that the mathematical proof, though no doubt cogent to the human mind (as at present constituted in most people), is open to the same objection that it does not deal with actual facts. It deals with a mental supposition, *i. e.*, that there are only two bodies acting on each other—a case which never has occurred and never can occur—and then, assuming the law of gravitation (which is just the thing which has to be proved), it arrives at a mental formula, the ellipse. But to argue from this process that the ellipse is really a thing in Nature, and that the heavenly bodies do move or even tend to move in ellipses, is obviously a most unwarrantable leap in the dark. Finally you argue that the leap is warranted because, by assuming that the moon and planets move in ellipses, you can actually foretell things that happen, as for instance the occurrence of eclipses; and in reply to that I can only say that Tycho Brahé foretold eclipses almost as well by assuming that the heavenly bodies moved in epicycles, and that modern astronomers actually do apply the epicycle theory in their mathematical formulæ. The epicycles were an assumption made for a certain purpose, and the ellipses are an assumption made for the same purpose. In some respects the ellipse is a more convenient fiction than the epicycle, but it is no less a fiction.

In other words—with regard to this “path of the moon” (as with regard to any other phenomenon of Nature)—our knowledge of it must be either absolute or relative. But we cannot know the absolute path;

and as to the relative, why all we can say is that it does not exist (any more than species exists)—we cannot break up Nature so; it is not a thing in Nature but in our own minds—it is a view and a fiction.

Again, let us take an example from Physics—Boyle's law of the compressibility of gases. This law states that, the temperature remaining constant, the volume of a given quantity of gas is inversely proportional to its pressure. It is a law which has been made a good deal of, and at one time was thought to be true, *i. e.*, it was thought to be a statement of fact. A more extended and careful observation, however, shows that it is only true under so many limitations, that, like the ellipse in Astronomy, it must be regarded as a convenient fiction and nothing more. It appears that air follows the supposed law pretty well, but not by any means exactly except within very narrow limits of pressure; other gases, such as carbonic acid and hydrogen, deviate from it very considerably—some more than others, and some in one direction and some in the opposite. It was found, among other things, that the nearer a gas was to its liquefying point, the greater was the deviation from the supposed law, and the conclusion was jumped at that the law was true for *perfect* gases only. This idea of a perfect gas of course involved the assumption that gases, as they get farther and farther removed from their liquefying point, reach at last a fixed and stable condition, when no further change in their qualities takes place—at any rate for a very long time—and Boyle's law was supposed to apply to this condition. Since then, however, it has been discovered that there is an ultra-gaseous state of matter, and on all sides it is becoming abundantly clear that the change in the condition of matter from the liquid state to the ultra-gaseous state is perfectly continuous—through all modifications of liquidity and condensation and every degree of perfection and imperfection of gassiness to the utmost rarity of the fourth state. At what point, then, does Boyle's law really apply? Obviously it applies *exactly* at only one point in this long ascending scale—at one metaphysical point—and at every other point it is incorrect. But no gas in Nature remains or can be maintained just at one point in the scale of its innumerable changes. Consequently all we can say is that out of the innumerable different states that gases are capable of, and the innumerable different laws of compressibility which they therefore follow, we could theoretically find one state to which would correspond the law of compressibility called Boyle's law; and that *if* we could preserve a gas in that state (which we can't) Boyle's law really *would* be true just for that case. In other words, the law is metaphysical. It has no real existence. It is a convenient view or fiction, arising in the first place out of ignorance, and only tenable as long as further observation is limited or wilfully ignored.

This then is the Method of Science. It consists in forming a law or statement by only looking at a small portion of the facts; then when the other facts come in the law or statement gradually fades away again.

Conrad Gessner and other early zoologists began by classifying animals according to the number of their horns! Political Economy begins by classifying social action under a law of Supply and Demand. When people believed that the earth was flat they generalised the facts connected with the fall of heavy bodies into a conception of "up and down." These were two opposite directions in space. Heavy bodies took the "downward;" it was their nature. But in time, and as fresh facts came in, it became impossible to group animals any longer by their horns; "up and down" ceased to have a meaning when it was known that the earth was round. Then fresh laws and statements had to be formed. In the last-mentioned case—it being conceived that the earth was the centre of the universe—the new law supposed was that all heavy bodies tended to the centre of the earth as such. This was all right and satisfactory for a while; but presently it appeared that the earth was *not* the centre of the universe, and that some heavy bodies—such as the satellites of Jupiter—did not in fact tend to the centre of the earth at all. Another lump of ignorance (which had enabled the old generalisation to exist) was removed, and a new generalisation, that of universal gravitation, was after a time formed. But it is probable that this law is only conceived of as true thro' our ignorance; nay it is certain that belief in its truth presents the gravest difficulties.

In fact here we come upon an important point. It is sometimes said that, granting the above arguments and the partiality and defectiveness of the laws of Science, still they are approximations to the truth, and as each fresh fact is introduced the consequent modification of the old law brings us *nearer and nearer* to a limit of rigorous exactness which we shall reach at last if we only have patience enough. But is this so? What kind of rigorous statement shall we reach when we have got *all* the facts in? Remembering that Nature is *one*, and that if we try to get a rigorous statement for one set of phenomena (as say the lunar theory) by isolating them from the rest, we are thereby condemning ourselves beforehand to a false conclusion, is it not evident that our limit is at all times infinitely far off? If one knew all the facts relating to a given inquiry except two or three, one might reasonably suppose that one was near a limit of exactness in one's knowledge; but seeing that in our investigation of Nature we only know two or three, so to speak, out of a million, it is obvious that at any moment the fresh law arising from increased experience may completely upset our former calculations. There is a difference between approximating to a wall and approximating to the North Star. In the one case you are tending to a speedy conclusion of your labors, in the other case you are only *going in a certain direction*. The theories of Science generally belong under the second head. They mark the direction which the human mind is taking at the moment in question, but they mark no limits. At each point the *appearance* of a limit is introduced—which becomes, like a mirage in the desert, an object of keen pursuit; but the limit is not really

there—it is only an effect of the standpoint, and disappears again after a time as the observer moves. In the case of gravitation there is for the moment an appearance of finality in the law of the inverse square of the distance, but this arises probably from the fact that the law is derived from a limited area of observation only, namely the movements (at great distances from each other) of some of the heavenly bodies.¹ The Cavendish and Schehallien experiments do not show more than that the law at ordinary distances on the earth's surface does not vary very much from the above; while the so-called molecular forces compel us (unless we make the very artificial assumption that a variety of attractions and repulsions coexist in matter alongside of, and yet totally distinct from, the attraction of gravitation) to suppose very *great* modifications of the law for small distances. In fact, as we saw of Boyle's law before—the Newtonian law is probably metaphysical—true under certain limited conditions—and the appearance of finality has been given to it by the fact that our observations have been made under such or similar conditions. When we extend our observations into quite other regions of space, the law of the inverse square ceases to appear as even an approximation to the truth—as, for instance, the law of the inverse *fifth* power has been thought to be nearer the mark for smaller molecular distances.

And indeed the state of the great theories of Science in the present day—the confusion in which the Atomic theory of physics finds itself, the dismal insufficiency of the Darwin theory of the survival of the fittest; the collapse in late times of one of the fundamental theories of Astronomy, namely that of the stability of the lunar and planetary orbits; the cataclysms and convulsions which Geology seems just now to be undergoing; the appalling and indeed insurmountable difficulties which attach to the Undulatory theory of Light; the final wreck and abandonment of the Value-theory, the foundation-theory of political Economy—all these things do not seem to point to very near limits of rigorous exactness! An impregnable theory, or one nearing the limit of impregnability, is in fact as great an absurdity as an impregnable armor-plate. Certainly, given the cannon-balls, you can generally find an armor-plate which will be proof against them; but given the armor-plate, you can always find cannon-balls which will smash it up.

The method of Science, as being a method of artificial limitation or actual ignorance, is curiously illustrated by a consideration of its various

¹ It is not generally realised how feeble a force gravitation is. It is calculated (Encycl. Brit., Art. Gravitation) that two masses, each weighing 415,000 tons, and placed a mile apart, would exert on each other an attractive force of only one pound. If one, therefore, was as far from the other as the moon is from the earth, their attraction would only amount to $\frac{1}{57,600,000,000}$ of a pound. This is a small force to govern the movement of a body weighing 415,000 tons! and it is easy to see that a slight variation in the law of the force might for a long period pass undetected, though in the course of hundreds of centuries it might become of the greatest importance.

branches. I have taken some examples from Astronomy, which is considered the most exact of the physical sciences. Now does it not seem curious that *Astronomy*—the study of the heavenly bodies, which are the most distant from us of all bodies, and most difficult to observe—should yet be the most perfect of the sciences? Yet the reason is obvious. Astronomy is the most perfect science *because we know least about it*—because our ignorance of the actual phenomena is most profound. Situated in fact as we are, on a speck in space, with our observations limited to periods of time which, compared with the stupendous flights of the stars, are merely momentary and evanescent, we are in somewhat the position of a mole surveying a railway track and the flight of locomotives. And as a man seeing a very small arc of a very vast circle easily mistakes it for a straight line, so we are easily satisfied with cheap deductions and solutions in Astronomy, which a more extended experience would cause us to reject. The man may have a long way to go along his “straight line” before he discovers that it is a curve; he may have much farther to go along his curve before he discovers that it is not a circle; and much farther still to go before he finds out whether it is an ellipse or a spiral or a parabola, or none of these; yet *what* curve it is will make an enormous difference in his ultimate destination. So with the astronomer; and yet Astronomy is allowed to pass as an exact science! ¹

Well then, as in Astronomy we get an “exact science” because the facts and phenomena are on such a tremendous scale that we only see a minute portion of them—just a few details so to speak—and our ignorance therefore allows us to dogmatise; so at the other end of the scale in Chemistry and Physics we get quasi exact sciences, because the facts and phenomena are on such a *minute* scale that we overlook *all the details* and see only certain general effects here and there. When a solution of cupric sulphate is treated with ammonia a mass of flocculent green precipitate is

¹ As another instance of the same thing, let me quote a passage from Maxwell’s “Theory of Heat,” p. 31; the italics are mine: “In our description of the physical properties of bodies as related to heat we have begun with solid bodies, as those which we can *most easily handle*, and have gone on to liquids, which we can keep in open vessels, and have now come to gases, which will escape from open vessels, and which are generally *invisible*. This is the order which is most natural in our first study of these different states. But as soon as we have been made familiar with the most prominent features of these different conditions of matter, the most *scientific* course of study is in the *reverse* order, beginning with gases, on account of the greater simplicity of their laws, then advancing to liquids, the more complex laws of which are much more imperfectly known, and concluding with the little that has been hitherto discovered about the constitution of solid bodies.” That is to say that Science finds it easier to work among gases—which are invisible and which we can know little about—than among solids, which we are familiar with and which we can easily handle! This seems a strange conclusion, but it will be found to represent a common procedure of Science—the truth probably being that the laws of gases are not one whit *simpler* than the laws of liquids and solids, but that on account of our knowing so much less about gases it is easier for us to *feign* laws in their case than in the case of solids, and less easy for our errors to be detected.

formed. No one has the faintest notion of all the various movements and combinations of the molecules of these two fluids which accompany the appearance of the precipitate. They are no doubt very complex. But among all the changes that are taking place, one change has the advantage of being visible to the eye, and the chemist singles that out as the main phenomenon. So chemistry at large consists in a few, very few, facts taken at random as it were (or because they happen to be of such a nature as to be observable) out of the enormous mass of facts really concerned, and because of their fewness the chemist is able to arrange them as he thinks in some order, that is, to generalise about them. But it is certain as can be that he only has to extend the number of his facts, or his powers of observation, to get all his generalisations upset. The same may be said of magnetism, light, heat, and the other physical sciences—but it is not necessary to prove in detail what is sufficiently obvious.

But now, roughly speaking, there is a third region of human observation—a region which does not, like Astronomy (and Geology), lie so far beyond and above us that we only see a very small portion of it; nor, like Chemistry and Physics, so far below us and under such minute conditions of space and time that we can only catch its general effects; but which lies more on a level with man himself—the so-called organic world—the study of man, as an individual and in society, his history, his development, the study of the animals, the plants even, and the laws of life—the sciences of Biology, Sociology, History, Psychology, and the rest. Now this region is obviously that which man knows most of. I don't say that he generalises most about it—but he knows the facts best. For one observation that he makes of the habits and behavior of the stars, or of chemical solutions—for one observation in the remote regions of Astronomy or Chemistry—he makes thousands and millions of the habits and behavior of his fellow-men, and hundreds and thousands of those of the animals and plants. Is it not curious then that in this region he is least sure, least dogmatic, most doubtful whether there be a law or no? Or, rather, is it not quite in accord with our contention, namely that Science, like an uninformed boy, is most definite and dogmatic just where actual knowledge is least.

It will however be replied that the phenomena of living beings are far more complex than the phenomena of Astronomy or Physics—and that is the reason why exact science makes so little way with them. Though man knows many million times more about the habits of his fellow-men than about the habits of the stars, yet the former subject is so many million times more complicated than the latter that all his additional knowledge does not avail him. This is the plea. Yet it does not hold water. It is an entire assumption to say that the phenomena of Astronomy are less complicated than the phenomena of vitality. A moment's thought will show that the phenomena of Astronomy are in reality infinitely complex. Take the movement of the moon: even with

our present acquaintance with that subject we know that it has some relation to the position and mass of the earth, including its ocean tides; also to the position and mass of the sun; also to the position and mass of every one of the planets; also of the comets, numerous and unknown as they are; also the meteoric rings; and finally of all the stars! The problem, as everyone knows, is absolutely insoluble even for the shortest period; but when the element of Time enters in, and we consider that to do anything like justice to the problem in an astronomical sense we should have to solve it for at least a million years—during which interval the earth, sun and other bodies concerned would themselves have been changing their relative positions, it becomes obvious that the whole question is infinitely complex—and yet this is only a small fragment of Astronomy. To debate, therefore, whether the infinite complexity of the movements of the stars is greater or less than the infinite complexity of the phenomena of life, is like debating the precedence of the three persons of the Trinity, or whether the Holy Ghost was begotten or proceeding: we are talking about things which we do not understand.

Nature is one; she is not, we may guess, less profound and wonderful in one department than another; but from the fact that we live under certain conditions and limitations we see most deeply into that portion which is, as it were, on the same level with us. In humanity we look her in the face; there our glance pierces, and we see that she is profound and wonderful beyond all imagination; what we learn there is the most valuable that we can learn. In the regions where Science rejoices to disport itself we see only the skirts of her garments, so to speak, and though we measure them never so precisely, we still see them and nothing more.

There is another point, however, of which much is often made as a plea for the substantial accuracy of the scientific laws and generalisations, namely that they enable us to *predict* events. But this need not detain us long. J. S. Mill in his "Logic" has pointed out—and a little thought makes it obvious—that the success of a prediction does not prove the truth of the theory on which it is founded. It only proves the theory was good enough for that prediction.

There was a time when the sun was a god going forth in his chariot every morning, and there was a time when the earth was the centre of the universe, and the sun a ball of fire revolving round it. In those times men could predict with certainty that the sun would rise next morning, and could even name the hour of its appearance; but we do not therefore think that their theories were true. When Adams and Leverrier foretold the appearance of Neptune in a certain part of the sky, they made a brief prediction to an unknown planet from the observed relations of the movements of the known planets; that does not show however that the grand generalisation of these movements, called the "law of gravitation," is correct. It merely shows that it did well enough for this very

brief step—brief indeed compared with the real problems of Astronomy, for which latter it is probably quite inadequate.

Tycho Brahé, excellent astronomer as he was, kept as we saw to the epicycle theory. He imagined that the moon's path round the earth was a fixed combination of cycle and epicycle. Kepler introduced the conception of the ellipse. Later on the motion of the perigee and other deviations compelled the abandonment of the ellipse and the supposition of an endless curve, similar to an ellipse at any one point, and maintaining a fixed mean distance from the earth, but never returning on itself or making a definite closed figure of any kind. Finally the researches of Mr. George Darwin have destroyed the conception of the fixed mean distance, and introduced that of a continually enlarging spiral. Certainly no four theories could well be more distinct from each other than these ; yet if an eclipse had to be calculated for next year it would scarcely matter which theory was used. The truth is that the actual problem is so vast that a prediction of a few years in advance only touches the fringe of it so to speak ; yet if the fulfilment of the prediction were taken as a proof of the theory in each of these different cases, it would lead us in the end to the most hopelessly contradictory results.

The success of a prediction therefore only shows that the theory on which it is founded has had practical value so far as a working hypothesis. As working hypotheses, as long as they are kept down to brief steps *which can be verified*, the scientific theories are very valuable—indeed we could not do without them ; but when they are treated as objective facts—when, for instance, the “law of gravitation”—derived as it is from a brief study of the heavenly bodies—has a universal truth ascribed to it, and is made to apply to phenomena extending over millions of years, and to warrant unverifiable prophecies about the planetary orbits, or statements about the age of the earth and the duration of the solar system—all one can say is that those who argue so are flying off at a tangent from actual facts. For as the tangent represents the direction of a curve over a small arc, so these theories represent the bearing of facts well enough over a small region of observation ; but as following the tangent we soon lose the curve, so following these theories for any distance beyond the region of actual observation we speedily part company with facts.¹

To proceed with a few more words about the general method of Science. Science passes from phenomena to laws, from individual details

¹ All our thoughts, theories, “laws,” &c., may perhaps be said to *touch* Nature—as the tangent touches the curve—at a point. They give a direction—and are true—at that point. But make the slightest move, and they all have to be reconstructed. The tangents are infinite in number, but the curve is one. This may not only illustrate the relation of Nature to Science, but also of Art to the materials it uses. The poet radiates thoughts ; but he sets no store by them. He knows his thoughts are not true in themselves, but they *touch* the Truth. His lines are the envelope of the curve which is his poem.

which can be seen and felt to large generalisations of an intangible and phantom-like character. That is to say, that for convenience of thought we classify objects. How is this classification effected? It is effected through the perception of identity amid difference. Among a lot of objects I perceive certain attributes in common; this group of common attributes serves, so to speak, as a band to tie these objects together with—into a bundle convenient for thought. I gave a name to the band, and that serves to denote any unit of the bundle by. Thus perceiving common attributes among a lot of dogs—as in an example already given—I give the name foxhound to this group of attributes, and thenceforth use the name foxhound to connect these objects by in my mind; again perceiving other common attributes among other similar objects, I invent the word greyhound to denote these latter by. The concept foxhound differs from the objects which it denotes, in this respect that these latter are (as we say) *real* dogs with thousands and thousands of attributes each: one of them has a broken tooth, another is nearly all white, another answers to the name “Sally,” and so on; while the concept is only an imaginary form in my mind, with only a few attributes and no individual peculiarities—a kind of tiny G.C.M. arising from the contemplation of a long row of big figures.

Now, having created these concepts “foxhound,” “greyhound,” and a lot of other similar ones, I find that they in their turn have a few attributes in common and thus give rise to a new concept “dog.” Of course this “dog” is more of an abstraction than ever, the concept of a concept. In fact the peculiarity of this whole process is that, as sometimes stated, the broader the generalisation becomes the less is its depth; or in other words and obviously, that as the number of objects compared increases, the number of attributes common to them all decreases. Ultimately as we saw at the beginning, when a sufficient number of objects are taken in, the concept (“dog” or whatever it may be) fades away and ceases to have any meaning. This therefore is the dilemma of Science and indeed of all human knowledge, that in carrying out the process which is peculiar to it, it necessarily leaves the dry ground of reality for the watery region of abstractions, which abstractions become ever more tenuous and ungraspable the farther it goes, and ultimately fade into mere ghosts. Nevertheless the process is a quite necessary one, for only by it can the mind deal with things.

To dwell for a moment over this last point: it is clear that every object has relation to every other object—exists in fact only in virtue of such relation to other objects; it has therefore an infinite number of attributes, the mind consequently is powerless to deal with such object—it cannot by any possibility think it. In order to deal with it, the mind is forced to single out a *few* of its attributes (the *method of ignorance* or abstraction already alluded to)—that is a few of its relations to other objects, and to think them first. The others it will think afterwards—all in good time.

In thus stripping or abstracting the great mass of its attributes from our object, and leaving only a few, which it combines into a concept, the mind practically abandons the real article and takes up with a shadow ; but in return for this it gets something which it can handle, which is light to carry about, and which like paper money, *for the time and under certain conditions* does really represent value. The only danger is lest it—the mind—carried away by the extensive applicability of the partial concept which it has thus formed, should credit it with an actual value—should project it on the background of the external world and ascribe to it that reality which belongs only to objects themselves, *i.e.*, to things embodying an *infinite* range of attributes.

The peculiar method of Science is now clear to us, and can be abundantly illustrated from modern results. Our experience consists in sensations, we feel the weight of heavy bodies, we see them fall when let go, we have sensations of heat and cold, light and darkness, and so forth. But these sensations are more or less local and variable from man to man, and we naturally seek to find some common measure of them, by which we can talk about and describe them *exactly*, and independently of the peculiarities of individual observers. Thus we seek to find some common phenomenon which underlies (as we say) the sensations of heat and cold, or of light and darkness, or something which explains (*i.e.*, is always present in) the case of falling bodies—and to do this we adopt the method of generalisation above described, *i.e.*, we observe a great number of individual cases and then see what qualities or attributes they have in common. So far good. But it is just here that the fallacy of the ordinary scientific procedure comes in ; for, forgetting that these common qualities are mere abstractions from the real phenomena we credit *them* with a real existence, and regard the actual phenomena as secondary results, “effects” or what-not of these “causes.” This in plain language is putting the cart before the horse—or rather the shadow before the man. Thus finding that a vast number of variously shaped and colored bodies tend to fall towards the earth, we erect this common attribute of falling into an independent existence which we call “attraction” or “gravitation”—and ultimately posit a universal gravitation *acting* on all bodies in Nature !—or finding that a number of different substances, such as water, air, wood, &c., convey to us the sensation we call sound, and that in all these cases the common element is vibration, we detach the attribute vibration, credit it with a separate existence, and speak of it as the cause of sound. But though we may thus *think* of the shadow as separate from the man, the shadow cannot *be* separate from the man ; and tho’ we may try to think of the falling or the vibration as separate from the wood or the stone, such falling and vibration cannot exist apart from these and other such materials, and the effort to speak of it as so existing ends in mere nonsense. More strange still is the fatuity, when, as in the case of the undulatory Theory of light or the Atomic theory of physics, the con-

cepts thus erected into actualities are composed of purely imaginary attributes—of which no one has had any experience—an undulatory ether in the one case, a hard and perfectly elastic atom in the other. The total result is of course—just what we see—Science landing itself in pure absurdities in every direction. Beginning by detaching the attribute of falling from the bodies that fall—beginning that is by an abstraction, which of course is also a falsity—it generalises and generalises this abstraction till at last it reaches a perfectly generalised absurdity and thing without any meaning—the law of gravitation. The statement that “every particle in the universe attracts every other particle with a force proportional to the mass of the attracting particle and inversely proportional to the square of the distance between the two” is devoid of meaning—the human mind can give no definite meanings to the words “mass,” “attract,” and “force,” which do not stultify each other. The law in every way baffles intelligence. Newton, who invented it, declared that no philosophic mind would suppose that bodies could thus act on one another “without the mediation of anything else by and through which their action might be conveyed;” scientific men to-day are fain to see that a material mediation of this kind would only make the law still more unintelligible than it is, while, on the other hand, an immaterial mediation or a fourth-dimensional mediation, such as some propose, would simply remove the problem out of the regions of scientific analysis. Again the form of the law is declared to be the inverse square of the distance; but this is the law by the nature of space itself of any perfect radiation, and if true of gravitation involves the conclusion that that radiation of force (whatever its nature may be) takes place without loss or dissipation of any kind. This would make gravitation absolutely unique among phenomena. More than this, its propagation is supposed to be *instantaneous* over the most enormous distances of space, and to take place always unhindered and unretarded whatever be the number or the nature of the bodies between! What can be more clear than that the law is simply metaphysical—a projection into a monstrous universality and abstraction, of partially understood phenomena in a particular region of observation—a Brocken-shadow on the background of Nature of the observer’s own momentary attitude of thought?

Again, the undulatory theory of Light. Studying the phenomena of a vast number of colored and bright bodies, Science finds that it can think about these phenomena—can generalise and tie them into bundles best by *assuming* that the bodies are all in a state of vibration; a vibration so minute that (unlike the vibrations connected with Sound) it cannot be directly perceived. So far good. There is no harm in the assumption of vibration as long as it is understood to be a mere assumption for a temporary convenience of thought. But now Science goes farther than this, and not only supposes a common attribute to all visible bodies, but credits this common attribute with a real existence independent of the visible

bodies in which it was supposed to inhere—and make this the *cause* of their visibility! Obviously now a common and universal medium is required for this common and universal assumed vibration (just as Newton required a medium for his universal “falling”)—and so, hey presto! we have the Undulatory Ether. And having got it we find that to fulfil our requirements it must have a pressure of 17 million million pounds on the square inch, and yet be so rare and tenuous as not to hinder the lightest breath of air; that while it is thus rare enough to surpass all our powers of direct scrutiny, its vibrations must yet be capable of agitating and breaking up the solidest bodies; that it must pass freely through some dense and close structures like glass, and yet be excluded by some light and porous, like cork, and so on and on! In fact we find that it is unthinkable. Against this adamantine, impalpable Ether, as against this instantaneous, untranslatable gravitation, Science bangs its devoted head in vain. Having created these absurdities by the method of “personification of abstractions”¹ or the “reification of concepts,”² it seriously and in all good faith tries to understand them; having dressed up its own Mumbo Jumbo (which it once jeered at religion for doing) it piously shuts its eyes and endeavors to believe in it.

The Atomic Theory³ affords a good example of the “method of ignorance,” when we try to think about material objects generally—to generalise about them—that is, to find some attribute or attributes common to them, we are at first puzzled. They present such an immense variety. But after a time, by dint of stripping off or abstracting all such attributes or qualities as we think we perceive in one body and not in another—as for example, redness, blueness, warmth, saltness, life, intelligence, or what not—we find an attribute left, namely resistance to touch, which is common to *all* material bodies. This quality in the body we call “mass,” and since it is only known by motion, mass and motion become correlative attributes which we find useful to class bodies by, not because they represent the various bodies particularly well,⁴ but because they are found in all bodies; just as you might class people by their boots—not because boots are a very valuable method of classification, but simply because every one wears boots of one kind or another. So far there is no great harm done. But now having by the method of ignorance *thought away* all the qualities of bodies, except the two correlatives of mass and motion, we set about to *explain* the phenomena of Nature generally by these two “thinks” that are left. We credit these “thinks” (mass and motion) with an independent existence and proceed to derive the rest of phenomena from them. The proceeding of course is absurd, and ends by exposing its own absurdity. Thinking of mass and motion as existing in the various bodies *apart* from color, smell, and so forth—which of course is not the case—we combine the two attributes into one concept, the atom,

¹ J. S. Mill.

² Stallo.

³ See Stallo's excellent *Concepts of Modern Physics*.

which we thus assume to exist in all bodies. The atom has neither color, smell, warmth, taste, life or intelligence; it has only mass and motion; for it came by the method of divesting our thoughts of everything *but* mass and motion. It is a projection of a "think" upon the background of nature. And it is an absurdity. No such thing exists in all the wide universe as mass and motion divested from color, smell, warmth, life and intelligence. The atom is unthinkable. It is perfectly hard and it is perfectly elastic—which is the same as saying that it bends and it doesn't bend at the same at time; it has form, and it hasn't form; it has affinities and yet is perfectly indifferent. To justify to men the ways of their Mumbo Jumbo has sorely exercised the votaries of the Atom. One philosopher says that it is mere matter, passive, exercising no force but resistance; another says that it is a centre of force, without matter; a third suggests that it is not itself matter, but only a vortex in other matter! All agree that it is not an object of sense, and there remains no conclusion but that it is nonsense!¹

And so on in all directions. Human thought flying off at its tangents from Nature lands itself in infinite nothings afar off, poor ghostly skeletons and abstractions from nature—which indeed is all right, for human thought as yet can only see ghosts and not realities; but let there be no mistake, let these ghosts not be mistaken for realities—for they are not even compatible with each other. The Atom that suits the physicist does not suit the chemist. The Ether that does for the vehicle of Light will not do for the vehicle of Gravitation, and the Medium that might do for universal Electricity would not be available for either of the other two purposes.

It would be hardly worth while entering into these criticisms, were it not evident that Science in modern times, either tacitly or explicitly, has been seeking, as I said at the beginning, to enounce facts independent of Man, the observer. Seeing that the ordinary statements of daily life are obviously inexact and relative to the observer—charged with human sensation in fact—Science has naturally tried to produce something which should be exact and independent of human sensation; but here it has of course condemned itself beforehand to failure; for no statement of isolated phenomena or groups of phenomena *can* be exact except by the method of ignorance aforesaid, and no statement obviously can be really independent of human sensation. When a man says *It is cold*, his statement, it must be confessed, is deplorably human and vague. *It*—what is that?

¹ See, for instance, the last new thing in this style—the Helmholtz molecule as improved upon by Sir William Thomson; it is described as follows "A heavy mass connected by massless springs with a massless enclosing shell; or there may be several shells enclosing each other connected by springs with a dense mass in the centre (far more dense than the ether)." It is not, of course, seriously maintained that this nonsensical creation exists—but that if it did exist it would account for certain unexplained phenomena in the dispersion of light, &c.

Is—do you mean *is*? or do you mean *feels, appears*? Cold—in what sense? Cold to yourself, or to other people, or to polar bears, or by the thermometer? And so on. Science therefore steps in with an air of authority and sets him right. It says *the temperature is 30 degrees Fahrenheit*, as if to settle the matter. But does this really settle the matter? *Temperature*—who knows what that is? What is the scientific definition of it? I find (Clerk-Maxwell's Theory of Heat, p. 2.) "the temperature of a body is a quantity which indicates how hot or how cold the body is." This sounds very much like saying, "The color of a body is a quantity which indicates how blue, red, or yellow the body is." It does not bring us much farther on our way. But in the next paragraph Maxwell shows the object of his definition (which of course is only preliminary) by saying, "By the use, therefore, of the word temperature, we fix in our minds the conviction that it is possible not only to feel, but to *measure*, how hot a body is." That is to say he clearly maintains that it is possible to find an absolute standard of hotness or coldness—or rather of the unknown thing called temperature—outside of ourselves and independent of human sensation. When the man said he was cold he was probably just describing his own sensations, but here Science indicates that it is in search of something which has an independent existence of its own, and which therefore when found we can measure exactly and once for all. What then is that thing? *What is temperature?* say, what is it?

We cudgel our brains in vain. Perhaps the remainder of the sentence will help us. "The temperature is 30 degrees Fahrenheit." "The unknown thing is thirty degrees." When then is a degree? That is the next question. When the Theory of Heat went out from sensation and left it behind, one of its first landing places was in the expansion of liquids—as in thermometer tubes. Here for some time was thought to be a satisfactory register of "temperature." But before long it became apparent that the degree—Fahrenheit, Réaumur, or what-not—was an entirely arbitrary thing, also that it was not the *same*¹ thing at one end of the scale as the other, and finally that the scale itself had no starting point! This was awkward, so a move was made to the air thermometer, and there was some talk about an absolute zero and absolute temperatures; it was thought that the Unknown thing showed itself most clearly and simply in the expansion of air and other gases, and that the "degree" might fairly be measured in terms of this expansion. But in a little time this kind of thermometer—chiefly because no gas turned out to be "theoretically perfect"—broke down, absolute zero and all, and another step had to be made—namely, to the dynamical theory. It was announced that the Unknown thing might be measured in terms of mechanical energy

¹ The very fact alone that the degrees on a thermometer are *equal* space divisions shows that they must bear a *varying* relation to the total volume of liquid as that expands from one end of the tube to the other.

and Joule at Manchester proclaimed that the work done by any quantity of water falling there a distance of 772 feet is capable of raising that water one degree Fahrenheit.¹ Here seemed something definite. To measure temperature by mass and velocity, to measure a degree by the flight of a stone, or the heat in the human body by the fall of a factory chimney—if rather roundabout and elusive of the main question—seemed at any rate promising of exact results! Unfortunately the difficulty was to pass from the theory to its application. The complicated nature of the problem, the “imperfection” of the gases and other bodies under consideration, the latent and specific heats to be allowed for, the elusive nature of heat in experiment, and the variable value of the degree itself—all render the conclusions on this subject most precarious; and the general equations connecting the Fahrenheit or other temperatures with a thermo-dynamic scale—while they become so unwieldy as to be practically useless—are themselves after all only approximate.

Finally, to give a last form to the mechanical theory of heat, the conception of flying atoms or molecules was introduced, and a number of neat generalisations were deduced from dynamical considerations. Of course it was inevitable, having once started with a mechanical theory, that one should arrive at the Atom some time or other—and (from what has already been said) it was also inevitable that the result should be unsatisfactory. It is sufficient to say that the molecular theory of heat is *not* in accordance with facts. Such things as the law of Charles and the law of Boyle, which according to it should be strictly accurate and of general application, are known to be true only over a most limited range. This failure of the theory may be said to arise partly from its being pursued by the statistical method; but if, on the other hand, we were to try and follow out the individual movement of each molecule, we should be landed in a problem far exceeding in complexity the wildest flights of Astronomy—and should have exchanged for the original difficulty about “temperature” a difficulty far greater.

The result of all this has been that notwithstanding the talk about energy and atoms, Science has sadly to confess that it can still give no valid meaning to the word temperature: the unknown thing is still unknown, the independent existence round the corner still escapes us. By the very effort to arrive at something independent of human sensation, Science has, in a roundabout way, arrived at an absurdity. When the man said he was cold, his statement—deplorably vague as it was—had some meaning: he was describing his feelings, or possibly he had seen some snow or some ice on the road; but when, in the endeavor to leave out the human and to say something absolute, Science declared that the temperature was thirty degrees, it committed itself to a remark which

¹ A statement obviously applying—from what has been already said—at only one point in the scale.

possibly was exact in form, but to which it has never given and never can give any meaning.¹

Similarly with other generalities of Science : the "law" of the Conservation of Energy, the "law" of the Survival of the Fittest—the more you think about them the less possible is it to give any really intelligible sense to them. The very word Fittest really begs the question which is under consideration, and the whole Conservation law is merely an attenuation of the already much attenuated "law" of Gravitation. The Chemical Elements themselves are nothing but the projection on the external world of concepts consisting of three or four attributes each : they are not more real, but very much less real than the individual objects which they are supposed to account for ; and their "elementary" character is merely fictional. It probably is in fact as absurd to speak of pure carbon or pure gold, as of a pure monkey or a pure dog. There are no such things, except as they may be arrived at by arbitrary definition and the method of ignorance.

In the search for exactness then Science has been continually led on to discard the human and personal elements in phenomena, in the hope of finding some residuum as it were behind them which should not be personal and human but absolute and invariable. And the tendency has been (hitherto) in all the science to get rid of such terms as blue, red, light, heavy, hot, cold, concord, discord, health, vitality, right, wrong, &c., and to rely on any less human elements discoverable in each case ; as for instance in Sound, to deal less and less with the judgments and sensations of the ear, and to rely more and more on measurements of lengths of strings, numbers of vibrations, &c. Each science has been (as far as possible) reduced to its lowest terms. Ethics has been made a question of utility and inherited experience. Political Economy has been exhausted of all conceptions of justice between man and man, of charity, affection, and the instinct of solidarity ; and has been founded on its lowest discoverable factor, namely self-interest. Biology has been denuded of the force of personality in plants, animals, and men ; the "self" here has been set aside, and the attempt made to reduce the science to a question of chemical and cellular affinities, protoplasm, and the laws of osmose. Chemical affinities, again, and all the wonderful phenomena of Physics are emptied down into a flight of atoms ; and the flight of atoms (and of astronomic orbs as well) is reduced to the laws of dynamics—which the student sitting in his chamber may write down on a piece of paper. Thus the idea, formulated by Comte, of a great scale of sciences arising from

¹ I am not, of course, here arguing against the use of thermometers or other instruments for practical purposes. This is a (perhaps *the*) legitimate field of Science. But as in the case of *prediction* before mentioned, the exactness of certain practical results obtained is a very different matter from the truth of the generalities which are supposed to underlie these results. In using a thermometer you need not even mention the word "temperature."

the simplest to the complex, has tacitly underlain modern scientific work. It—Science—has sought to “explain” each stage by reference to a lower stage—“blueness” by vibrations, and vibrations by flying atoms—the human always by the sub-human. Going out from humanity dissatisfied, it has wandered through the animal and vegetable kingdoms, through the regions of Chemistry and Physics, into that of Mechanics. “Here at last, in Mechanics, is something outside humanity, something exact in itself, something substantial,” it has said. “Let us build again on this as on a foundation, and in time we shall find out what humanity is.” This I say has been the dream of Modern Science; yet the fallacy of it is obvious. We have not got outside the human, but only to the outermost verge of it. Mass and motion, which in this process are taken to be real entities and the first progenitors of all phenomena, are simply the last abstractions of sensible experience, and our emptiest concepts. The *material* explanation of the universe is simply an attempt to account for phenomena by those attributes which appear to us to be common to them all—which is, as said before, like accounting for men by their boots;—it may be possible to get an exact formula this way, but its contents have little or no meaning.

The whole process of Science and the Comtian classification of its branches—regarded thus as an attempt to explain Man by Mechanics—is a huge vicious circle. It professes to start with something simple, exact, and invariable, and from this point to mount step by step till it comes to Man himself; but indeed it starts with Man. It plants itself on sensations low down (mass, motion, &c.), and endeavors by means of them to explain sensations high up, which reminds one of nothing so much as that process vulgarly described as “climbing up a ladder to comb your hair.” In truth Science has never left the great world, or cosmos, of Man, nor ever really found a *locus standi* without it; but during the last two or three centuries it has gone in this *direction*, outwards, continually. Leaving the central basis and facts of humanity as too vast and unmanageable, and also as apparently variable from man to man and therefore affording no certain consent to work upon, it has wandered gradually outwards, seeking something of more definite and universal application. Discarding thus one by one the interior phases of sensation—as the sense of personal relationship, the sense of justice, duty, fitness in things or what-not (as too uncertain, or perhaps developed to an unequal degree in different persons, embryonic in one and matured in another), drifting past the more specialised bodily senses, of color, sound, taste, smell, &c., as for similar reasons unavailable—Science at last in the primitive consciousness of muscular contraction and its abstraction “mass” or “matter” comes to a pause. Here in this last sense, common probably to man and to the lowest animals, it finds its widest, most universal ground—its farthest limit from the Centre. It has reached the outermost shell, as it were, of the great Mancosmos. Even this shell is partially human; it is not en-

tirely osseous, and so far not entirely exact and invariable; but Science can go no farther—and there, for the present, it may remain!

Some day perhaps, when all this showy vesture of scientific theory (which has this peculiarity that only the learned can *see* it) has been quasi-completed, and Humanity is expected to walk solemnly forth in its new garment for all the world to admire—as in Anderssen's story of the Emperor's New Clothes—some little child standing on a door-step will cry out: "But he has got nothing on at all," and amid some confusion it will be seen that the child is right.

NOTE.

"I fear I have very imperfectly succeeded in expressing my strong conviction that, before a rigorous logical scrutiny, the Reign of Law will prove to be an unverified hypothesis, the Uniformity of Nature an ambiguous expression, the certainty of our scientific inferences to a great extent a delusion." (Stanley Jevons, *Principles of Science*, p. ix.)

THE SCIENCE OF THE FUTURE :

A FORECAST.

Once let that [the human ideal] slip out of the thought, and science is of no more use than the invocations in the Egyptian papiri.—RICHARD JEFFERIES.

IT would appear then, from the preceding paper, that in some sense a mistake has been made in the method of modern scientific work ; not that the vast amount of labor expended in it has been altogether wasted, for in return for this there is a mass of practical results and detailed observations to show ; but that in attempting to solve the problem of science by the intellect alone, a radical mistake has been made which *could* only land us in absurdity, and that this mistake has for the time being also vitiated the results that have been attained. For—in reference to this last point—the divorce of the intellectual from the emotional has caused a great portion of our scientific observations to become merely pedantic and trifling ; while it has turned the practical results—as industrial and military machinery, &c.—into engines of evil as often as into engines of good.

Science in searching for a permanently valid and purely intellectual representation of the universe has, as already said, been searching for a thing which does not exist. The very facts of Nature, as we call them, are at least half feeling. If we try to clean the feeling out of a fact and to produce a statement which shall be devoid of the human or sense element, it simply amounts to cleaning the meaning out ; and though our resulting statement may be exact it is nugatory and of no value. We might as well try to take the clay out of a brick. It must never be forgotten that the logical processes—important as they are—cannot stand by themselves, have no standing ground of their own. They presuppose assumptions and are the expression of things that are unreasoning, perhaps illogical. The strictest logic is a mere hooking together of links in a chain, and the last link is of no use—you can put no stress on it—unless the first is secured somewhere. The strength of the intellectual chain is no greater than that of the staple from which it hangs—and that is a human feeling. The strength of Euclid is no greater than that of the axioms—and *they* are feelings ; they are unreasoning statements of which

all that we can say is, "I *feel* like that." In fact, all the propositions of Geometry are nothing but the analysis and elaborate expression, so to speak, of these primary convictions—and the Geometry-structure stands and falls with them. There is no such thing as intellectual truth—that is, I mean, a truth which can be stated as existing apart from feeling. If, for instance, a proposition in Geometry can be really shown to be based on the axioms, it is true, not intellectually or absolutely, but as an expression of my primary Geometrical sense ; and if my giving a few pence to a crossing sweeper is based not on a mere impression of duty, or an anxiety to appear charitable, or wish to escape his importunity, but on genuine regard for the man, then it is true, not in any absolute signification, but just as an expression of what it professes to represent—namely my primary sense of humanity. Indeed the truest truth is that which is the expression of the deepest feeling, and if there is an absolute truth it can only be known and expressed by him who has the absolute feeling or Being within himself.

This being so—and the nature of the intellectual processes being, like the links in a chain, transitional—it becomes obvious that the intellectual results may figure as a *means* but never as an end in themselves. To hang any weight of reliance on them in the latter sense is like the Chinese Trick—described by Marco Polo—of throwing a rope's end up in the air and then climbing up the rope. Hence it appears that our scientific theories, are perfectly legitimate as long as they are formed as a means towards *practical* applications. In that sense they are transitional ; they are formed not as substantial truths but merely as links in a chain towards some definite practical result. For this purpose we may form whatever theories are convenient : if we are calculating the strength of bridges, we may adopt what generalisations we like concerning mechanical structure, as long as they give us actual and practical results ; if we are predicting eclipses, we may make use of any theory that will do. The theory does not matter as long as it hauls the practical result after it, just as it does not matter whether your cable is of iron or hemp or silk as long as you can get your ship into dock with it. In this sense our Modern Science is, I conceive, admirable. For practical results and brief predictions it affords a quantity of useful generalisations—shorthand notes and conventional symbols and pocket summaries of phenomena—which bear about the same relation to the actual world that a map does to the country it is supposed to represent. It cannot be said to have any resemblance to the real thing—but when you understand the principle on which it is formed it is exceedingly useful for finding your way about. As long as Science therefore keeps the practical end in view, and starting from sense seeks to return to sense again, its intermediate theorising is perfectly legitimate ; but the moment it credits its theory with a positive and authoritative existence, as an actual representation of facts—and endeavors to pass by means of it into unverifiable and abstract regions, as of invisible germs or atoms,

or far distances of space, or the remote past or future—it is simply throwing its rope's end into the sky and trying to climb up!

That "the wish is father to the thought" is in its wide sense profoundly true. In the individual, feeling precedes thinking—as the body precedes the clothes. In history, the Rousseau precedes the Voltaire. There is, I believe, a physiological parallel; for behind the brain and determining its action stands the great sympathetic nerve—the organ of the emotions. In fact here the brain appears as distinctly transitional. It stands between the nerves of sense on the one hand and the great sympathetic on the other.

Change the feeling in an individual, and his whole method of thinking will be revolutionised; change the axiom or primary sensation in a science, and the whole structure will have to be re-created. The current Political Economy is founded on the axiom of individual greed; but let a new axiomatic emotion spring up (as of justice or fair play instead of unlimited grab), and the base of the science will be altered, and will necessitate a new construction.

So when people argue (on politics, morality, art, &c.) it will generally be found that they differ at the *base*; they go out, perhaps quite unconsciously, from different axioms and hence they *cannot* agree. Occasionally of course a strict examination will show that, while agreeing at the base, one of them has made a false step in deduction; in that case his thought does *not* represent his primary feeling, and when this is pointed out he is forced to alter it. But more often it is found that the difference lies deep down at a point beyond the reach of reason; and they disagree to the end. In this case neither is right and neither is wrong. They simply feel differently; they are different persons.

The thought then is the expression, the outgrowth, the covering, of underlying Feeling. And in the great life of Man as a whole, as in the lesser life of the individual, his continual new birth and inward growth causes his thought-systems also continually to change and be replaced by new ones. Like the bud-sheaths and husks in a growing plant or tree they give form for a time to the life within; then they fall off and are replaced. The husk prepares the bud underneath which is to throw it off. The thought prepares and protects the feeling underneath which growing will inevitably reject it; and when a thought has been formed it is already *false, i.e., ready to fall.*

We are now, then, in a position to come back to the question of a genuine Science, truly so-called.

As there is no invariable and absolute datum on the fringe of humanity—no definable flying atom on which we can found our reasonings—and as Modern Science, considered as an actual representation of the universe, falls miserably to pieces in consequence—is it possible that we have made a mistake in the *direction* in which we have sought for our datum; and may it be that we should look for it in the very Centre of Humanity in-

stead of in its remotest circumference? In that direction evidently, if we could penetrate, we should expect to find, not a shadowy intellectual generalisation, but the very opposite of that—an intense immutable *feeling* or state, an axiomatic condition of Being. Is it possible, that here, blazing like a sun (if we could only see it—and the sun is its allegory in the physical world), there exists within us absolutely such a thing—the one *fact* in the universe of which all else are shadows, to which everything has relation, and round which, itself unanalysable, all thought circles and all phenomena stand as indirect modes of expression?

Is it possible? That is the question—the question which each one of us has to solve. At any rate, let us throw this out as a suggestion. Let us suggest that as we have got nothing satisfactory by cleaning the senseless out of phenomena, we should take the opposite course and put as much sense into them as we can!

“Facts” are, at least, half feelings. Let us acknowledge this and not empty the feeling out of them, but deepen and enlarge that which we already have in them. Who knows whether we have ever *seen* the blue sky? Who knows whether we have ever seen each other? Is it not a commonplace to say that one man sees in the common objects of Nature what another is wholly unconscious of? “The primrose on the river’s brim a yellow primrose is to him—and nothing more.” To what extent may the facts of Nature thus be deepened and made more substantial to us—and whither will this process lead us?

Do we not want to feel *more*, not less, in the presence of phenomena—to enter into a living relation with the blue sky, and the incense-laden air, and the plants and the animals—nay, even with poisonous and hurtful things to have a keener *sense* of their hurtfulness? Is it not a strange kind of science that which wakes the mind to pursue the shadows of things, but dulls the senses to the reality of them—which causes a man to try to bottle the pure atmosphere of heaven and then to shut himself in a gas-reeking, ill-ventilated laboratory while he analyses it; or allows him to vivisect a dog, unconscious that he is blaspheming the pure and holy relation between man and the animals in doing so? Surely the man of Science (in its higher sense, that is) should be lynx-eyed as an Indian, keen-scented as a hound—with all senses and feelings trained by constant use and a pure and healthy life in close contact with Nature, and with a heart beating in sympathy with every creature. Such a man would have at command, so to speak, the key-board of the universe; but the mechanical, unhealthy, indoor-living student—is he not really *ignorant of the facts*?—Certainly, since he has not felt them, he is.

The process of the true Science consists first in the naming and defining of phenomena (*i.e.*, the facts of human consciousness), and secondly, in the discovery of the true relation of these phenomena to each other; and since the definitions of phenomena and their relations keep varying from the standpoint of the observer, the process evidently involves all ex-

perience, and ultimately the discovery of that last fact of experience to which and through which all the other facts are related. It is therefore an age-long process, and has to do with the emotional and moral part of man as well as with the logical and intellectual. It is in fact the discovery of the nature of Man himself, and of the true order of his being.

Modern Science—though seeking for a unity in Nature—fails to find it, because, from the nature of the case, any large body of knowledge in which all people will agree is limited to certain small regions of human experience—regions in which very likely no unity is discoverable. It takes the emerald, and breaks it up; treats of its color and light-refracting qualities on the one hand; of its crystalline structure and hardness on the other; of its weight and density; and of its chemical properties; all separately, and producing long strings of generalisation from each aspect of the subject. But how all these qualities are conjoined together, what their relation is which *constitutes* the emerald—yea, even the smallest bit of emerald dust—it (wisely) does not attempt to say. It takes the man and dissects him; treats of his blood, his nerves, his bones, his brain; of his senses of sight, of touch, of hearing; but of that which binds these together into a unity, of their true relation to each other in the man, it is silent.

Yet the man knows of himself that he *is* a unity; he knows that all parts of his body have relation to *him*, and to each other; he knows that his senses of sight and hearing and touch and taste and smell are conjoined in the focus of his individual life, in his "I am;" he knows that all his faculties and powers, however much they may belong to different planes, spiritual or material, or may come under the inquisition of different Sciences, have an order of their own among each other—that there *is* an ultimate Science of them—even though he be not yet wholly versed in it. And he knows moreover that in a grain of dust, or in an emerald, or in an orange, or in any object of Nature, the different attributes of the object—which the Sciences thus treat of separately—are only the reflexion of his different senses; so that the problem of the conjunction of different attributes in a body comes back to the same problem of the union of various senses and powers in himself—each individual object being only a case, externalised as it were, and made a matter of consciousness, of the general relation to each other of his own sensations and feelings. Knowing all this—I say—he sees that the understanding of Nature in general and of the laws or relations which he thinks he perceives among external things, must always depend on the relations and laws which he tacitly assumes, or which he is directly conscious of, as existing between the various parts of his own being; and that the ultimate truth which Science—the divine Science—is really in search of is a moral Truth—an understanding of what man is, and the discovery of the true relation to each other of all his faculties—involving all experience, and an exercise of every faculty, physical, intellectual, emotional and spiritual, instead of one set of faculties only.

Not till we know the law of ourselves, in fact, shall we know the law of the emerald and the orange, or of Nature generally ; and the law of ourselves is not learnt, except subordinately, by intellectual investigation ; it is mainly learnt by life. The relation of gravity to vitality is learnt not so much by outer experiment in a laboratory as by long experience within ourselves from the day when as infants we cannot lift ourselves above the floor, through the years of the proud strength of manhood scaling the loftiest mountains, to the hour when our disengaged spirits finally overcome and pass beyond the attraction of the earth ; and just as the sense of weight—which first appears as a quite external sensation—is thus at last found to stand in most pregnant relation with our deepest selves, so of the other senses which feed the individual life—the senses of light, of warmth, of taste, of sound, of smell. Taste, which begins as it were on the tip of the tongue, becomes ultimately, if normally developed, a sense which identifies itself with the health and well-being of the whole body ; the pleasure of taste becomes vastly more than a mere surface pleasure, and its discrimination of food more than a mere regard for the nutrition of the ordinary corporeal functions. The sense of Light, which begins in the material eye, grows and deepens inwardly till the consciousness of it pervades the whole body and mind with a kind of inward illumination or divine Reason, showing the places of all things and enfolding the sense of beauty in itself. The sense of Warmth in the same manner is related to and leads up to Love ; and Sound, in the voices of our friends or the divine chords of music, has passed away from being an external phenomenon and has established itself as the language of our most tender and intimate emotions.

All the senses thus as they develop and deepen are found to unite in the very focus of individual life. Slowly, and through long experience, their relation to each other, *their very meaning* unfolds, or will unfold ; and as this process takes place the man knows himself *one*, a unity, of which the various faculties are the different manifestations. Then further through his less localised feelings or more glorified senses the individual finds his relation to other individuals. Through his loves and hatreds, through his senses of attraction, repulsion, cohesion, solidarity, order, justice, charity, right, wrong and the rest—these feelings, each like the others deepening back more and more as time goes on—he gradually discovers his true and abiding relationship to other individuals and to the divine society of which they all form a part—and so at last, if we may venture to say so, his relationship to the absolute and universal. At present, since our most important relation to each other is conceived of as one of rivalry and Competition, we of course think of the objects of Nature as being chiefly engaged in a Struggle for Existence with each other ; but when we become aware of all our senses and feelings, and of ourselves as individuals, as having relation to the Absolute and universal, proceeding from it, as the branches and twigs of a tree from the trunk—

then we shall become aware of a Divine or absolute science in Nature ; we shall at last understand that all objects have a permanent and indissoluble relation to each other, and shall see their true meaning—though not till then.

Is it possible then that Science, having hitherto—and we shall see in time that this process has been really most valuable and important—gone outwards from the centre towards the very fringe of Humanity—emptying facts as far as possible as it went of all feeling, and reducing itself at last to the most shadowy generalisations on the very verge of sense and non-sense—is it possible, I say, that it will now return, and *first* filling up facts with feeling as far as practicable (that is, by direct and the most living contact with Nature in every form, learning to enter into direct personal sense-relationship with every phenomenon and phase), will so gradually ascend to the great central fact and feeling, and then at last and for the first time become fully conscious of a vast organisation—absolutely perfect and intimately knit from its centre to its utmost circumference—(the true cosmos of Man—the conceptions of man and god combined)—existing inchoate or embryonic in every individual man, animal, plant, or other creature—the object of all life, experience, suffering, and toil—the ground of all sensation, and the hidden yet proper theme of all thought and study ?

For this is it possible that Science will, speaking broadly, have to leave the laboratory and become one with Life ; or that the great currents of human life will have to be turned on into these often Augean stables of intellectual pruriency ?—the investigation of Nature no longer a matter of the intellect alone, but of patient listening and the quiet eye, and of love and faith, and of all deep human experience, bearing not superciliously its weight towards the interpretation of the least phenomenon—every “fact” thus deepened to its utmost—all experience (rather than experiment) courted, and filial walking with Nature, rather than tearing of veils aside—the life of the open air, and on the land and the waters, the companionship of the animals and the trees and the stars, the knowledge of their habits at first hand and through individual relationship to them, the recognition of their voices and languages, and listening well what they themselves have to say ; the keenest education of the senses towards the physical powers and elements, and the acceptance of *all* human experience, without exception—till Science become a reality.

Is it possible that in some sense, instead of reducing each branch of Science to its lowest terms, we shall have to read it in the light of its *highest* factors, and “take it up” into the Science above—that we shall have to take up the mechanical sciences into the physical, the physical into the vital, the vital into the social and ethical, and so forth, before we can understand them ? Is it possible that the phenomena of Chemistry only find their due place and importance in their relation to living beings and processes ; that the phenomena of Vitality and the laws of

Biology and Zoology—Evolution included—can only be “explained” by their dependence on self-hood—both in plants and animals ; that Political Economy and the Social Sciences (which deal with men as individual selves) must, to be understood aright, be studied in the light of those great ethical principles and enthusiasms, which to a certain extent override the individual self ; and that, finally, Ethics, or the study of moral problems, is only comprehensible when the student has become aware of a region beyond Ethics, into which questions of morality and immorality, of right and wrong, do not and cannot enter?

Of this reversal of the ordinary scientific method Ruskin has given a great and signal instance in his treatment of Political Economy ; it remains, perhaps, for others to follow his example in the other branches of Science.¹

With regard to the absolute datum question we have seen that Science has two alternatives before it—either to be merely intellectual and to seek for its start-point in some quite external (and imaginary) thing like the Atom, or to be divine and to seek for its absolute in the innermost recesses of humanity. We have two similar alternatives in the doctrine of Evolution, which looks either to one end of the scale or the other for its interpretation—either to the amoeba or to the man—to something it knows next to nothing of, or to that which it knows most of. Goethe, when gazing at a fan-palm at Padua, conceived the idea of leaf metamorphosis, which he afterwards enunciated in the now accepted doctrine that all parts of a plant—seed-vessel, pistil, stamens, petals, sepals, stalk, &c.—may be regarded as modifications of a leaf or leaves. In this view the distinctions between the parts are effaced, and we have only one part instead of many—but the question is “what is that part?” It is of course arbitrary to call it a leaf, for since it is continually varying it is at one time a leaf, at another a stalk, and then a petal or a sepal, and so forth. What then is it? For the moment we are baffled.

So with the doctrine of Evolution as applied to the whole organic kingdom up to man. Like the doctrine of leaf-metamorphosis it obliterates distinctions. Geoffroy St. Hilaire proposed to show the French Academy that a Cephalopod could be assimilated to a Vertebrate by supposing the latter bent backwards and walking on its hands and feet. There is a continuous variation from the mollusc to the man—all the lines of dis-

¹ Thus the study of Geometry would be primarily an education of the eye, and the mind's eye, to the perception of geometrical forms and facts, the judgment of angles, &c.—and secondarily only a process of deductive reasoning—a body of empirical knowledge strengthened and tied together by bands of logic ; the study of Natural History would be primarily an affectionate intimacy with the habits of animals and plants, and classification would be treated as a secondary matter and as a help to the former ; Physiology would be studied in the first place by the method of Health—the pure body—becoming gradually transparent with all its organs to the eye of the mind—and dissection would be used to corroborate and correct the results thus attained ; and so on.

inction run and waver—classes and species cease to exist—and Science instead of many sees only *one* thing. What then is that one thing? Is it a mollusc, or is it a man, or what is it? Are we to say that man may be looked upon as a variation of a mollusc or an amoeba, or that the amoeba may be looked on as a variation of man? Here are two directions of thought: which shall we choose? But the plain truth is, the Intellect can give no satisfactory answer. Whichever, or whatever, it chooses, the choice is quite arbitrary—just as much so as the choice of the “leaf” in the other case. There is no answer to be given. And thus it is that *the appearance of the doctrine of Evolution is the signal of the destruction of Science* (in the ordinary acceptance of the word). For evolution is the successive obliteration of the arbitrary distinctions and landmarks which by their existence *constitute* Science, and as soon as Evolution covers the whole ground of Nature—inorganic and organic (as before long it will do)—the whole of Nature runs and wavers before the eye of Science, the latter recognises that its distinctions *are* arbitrary, and turns upon and destroys itself. This has happened before, I believe—ages back in the history of the human race—and probably will happen again.

The only conceivable answer to the question, “What is that which is now a mollusc and now a man and now an inorganic atom?”¹ is given by man himself—and his answer is, I fear, not “scientific.” It is “I am.” “I am that which varies.” And the force of his answer depends on what he means by the word “I.” And so also the only conceivable answer to the absolute datum question is to be found in the meaning of the word “I”—in the deepening back of consciousness itself. Man is the measure of all things. If we are to use Science as a minister to the most external part, of man—to provide him with cheap boots and shoes, &c.—then we do right to seek our absolute datum in his external part, and to take his *foot* as our first measure. We found a science on feet and pounds, and it serves its purpose well enough. But if we want to find a garment for his inner being—or, rather, one that shall fit the *whole* man—to wear which will be a delight to him and as it were a very interpretation of himself—it seems obvious that we must not take our measure from outside, but from his very most central principle. The whole question is, whether there *is* any absolute datum in this direction or not. There have been men through all ages of history (and from before) who have declared that there is. They have perhaps been conscious of it in themselves. On the other hand there have been men who, starting from their feet, declared that consciousness itself was a mere incident of the human machine—as the whistle of the engine—and thus the matter stands. On the whole, at the present day, the *feet* have it, and (notwithstanding their variety in size and boot-induced conformation) are generally accepted as the best absolute datum available.

Under the foot *régime* the universe is generally conceived of as a medley

¹ Compare the Sphinx-riddle: What is that which goes on four legs, &c.

of objects and forces, more or less orderly and distinct from man, in the midst of which man is placed—the purpose and tendency of his life being “adaptation to his environment.” To understand this we may imagine Mrs. Brown in the middle of Oxford Street. ‘Buses and cabs’ are running in different directions, carts and drays are rattling on all sides of her. This is her environment, and she has to adapt herself to it. She has to learn the laws of the vehicles and their movements, to stand on this side or on that, to run here and stop there, conceivably to jump into one at a favorable moment, to make use of the law of its movement, and so get carried to her destination as comfortably as may be. A long course of this sort of thing “adapts” Mrs. Brown considerably, and she becomes more active, both in mind and body, than before. That is all very well. But Mrs. Brown has a *destination*. (Indeed how would she ever have got into the middle of Oxford Street at all if she had not had one? and if she did get there with no distinction at all, but merely to skip about, would there be any Mrs. Brown left in a short time?) The question is, “What is the destination of Man?”

About this last question unfortunately we hear little. The theory is (I hope I am not doing it injustice) that by studying your environment sufficiently you will find out—that is, that by investigating Astronomy, Biology, Physics, Ethics, &c., you will discover the destiny of man. But this seems to me the same as saying that by studying the laws of cabs and ‘buses’ sufficiently you will find out where you are going to. These are ways and means. Study them by all means, that is right enough; but do not think *they* will tell you where to go. You have to use them, not they you.

In order therefore for the environment to act, there must be a destination. This I suppose is expressed in the biological dictum, “organism is made by function as well as environment.” What then is the function of Man? And here we come back again to the meaning of the word “I.”

Notwithstanding then the prevalence of the foot *régime*, and that the heathen so furiously rage together in their belief in it, let us suggest that there is in man a divine consciousness as well as a foot-consciousness. For as we saw that the sense of taste may pass from being a mere local thing on the tip of the tongue to pervading and becoming synonymous with the health of the whole body; or as the blue of the sky may be to one person a mere superficial impression of color, and to another the inspiration of a poem or picture, and to a third—as to the “god-intoxicated” Arab of the desert—a living presence like the ancient Dyaus or Zeus; so may not the whole of human consciousness gradually lift itself from a mere local and temporary consciousness to a divine and universal? There is in every man a local consciousness connected with his quite external body; that we know. Are there not also in every man the makings of a universal consciousness? That there are in us phases of conscious-

ness which transcend the limit of the bodily senses is a matter of daily experience ; that we perceive and know things which are not conveyed to us by our bodily eyes or heard by our bodily ears is certain ; that there rise in us waves of consciousness from those around us, from the people, the race, to which we belong, is also certain ; may there not then be in us the makings of a perception and knowledge which shall not be relative to this body which is here and now, but which shall be good for all time and everywhere ? Does there not exist in truth as we have already hinted—an inner Illumination—of which what we call light in the outer world is the partial expression and manifestation—by which we can ultimately see things *as they are*, beholding all creation, the animals, the angles, the plants, the figures of our friends and all the ranks and races of human kind, in their true being and order—not by any local act of perception, but by a cosmical intuition and presence, identifying ourselves with what we see ? Does there not exist a perfected sense of Hearing—as of the morning-stars singing together—an understanding of the words that are spoken all through the universe, the hidden meaning of all things, the word which is creation itself—a profound and far pervading sense, of which our ordinary sense of sound is only the first novitiate and initiation ? Do we not become aware of an inner sense of Health and of holiness—the translation and final outcome of the external sense of taste—which has power to determine for us absolutely and without any ado, without argument and without denial, what is good and appropriate to be done or suffered in every case that can arise ?

And so on ; it is not necessary to say more. If there are such powers in man, then there is indeed an exact science possible. Short of it there is only a temporary and phantom science. “Whatever is known to us by (direct) consciousness,” says Stuart Mill in his *System of Logic*, “is known to us beyond possibility of question ;” what is known by our local and temporary consciousness is known *for the moment* beyond possibility of question ; what is known by our permanent and universal consciousness is permanently known beyond possibility of question.

DEFENCE OF CRIMINALS:

A CRITICISM OF MORALITY.

The State is the actually existing realised moral life. For it is the unity of the universal essential Will with that of the individual, and this is "Morality."—HEGEL.

A CRIMINAL is literally a person accused—accused, and in the modern sense of the word convicted, of being harmful to Society. But is he there in the dock, the patch-coated brawler or burglar, really harmful to Society? is he more harmful than the mild old gentleman in the wig who pronounces sentence upon him? That is the question. Certainly he has infringed the law: and the law is in a sense the consolidated public opinion of Society: but if no one were to break the law, public opinion would ossify, and society would die. As a matter of fact Society keeps changing its opinion. How then are we to know when it is right and when it is wrong? The Outcast of one age is the Hero of another. In execration they nailed Roger Bacon's manuscripts out in the sun and rain, to rot crucified upon planks—his bones lie in an unknown and un-honored grave—yet to-day he is regarded as a pioneer of human thought. The hated Christian holding his ill-famed love-feasts in the darkness of the catacombs has climbed on to the throne of S. Peter and the world. The Jew money-lender whom Front-de-Bœuf could torture with impunity is become a Rothschild—guest of princes and instigator of commercial wars; and Shylock is now a highly respectable Railway Bondholder. And the Accepted of one age is the Criminal of the next. All the glories of Alexander do not condone in our eyes for his cruelty in crucifying the brave defenders of Tyre by thousands along the sea-shore; and if Solomon with his thousand wives and concubines were to appear in London to-morrow, even our most frivolous circles would be shocked, and Brigham Young by contrast seem a domestic model. The judge pronounces sentence on the prisoner now, but Society in its turn and in the lapse of years pronounces sentence on the judge. It holds in its hand a new canon, a new code of morals, and consigns its former representative and the law which he administered to a limbo of contempt.

It seems as if Society, as it progresses from point to point, forms ideals—just as the individual does. At any moment each person, consciously or unconsciously, has an ideal in his mind toward which he is working (hence the importance of literature). Similarly Society has an ideal in its

mind. These ideals are tangents or vanishing points of the direction in which Society is moving at the time. It does not reach its ideal, but it goes in that direction—then, after a time, the direction of its movements changes, and it has a new ideal.

When the ideal of Society is material gain or possession, as it is largely to-day, the object of its special condemnation is the thief—not the rich thief, for he is already in possession and therefore respectable, but the poor thief. There is nothing to show that the poor thief is really more immoral or unsocial than the respectable money-grubber; but it is very clear that the money-grubber has been floating with the great current of Society, while the poor man has been swimming against it, and so has been worsted. Or when, as to-day, Society rests on private property in land, its counter-ideal is the poacher. If you go in the company of the county squire-archy and listen to the after-dinner talk, you will soon think the poacher a combination of all human and diabolic vices; yet I have known a good many poachers, and either have been very lucky in my specimens or singularly prejudiced in their favor, for I have generally found them very good fellows—but with just this one blemish, that they invariably regard a landlord as an emissary of the evil one! The poacher is as much in the right, probably, as the landlord, but he is not right for the time. He is asserting a right (and an instinct) belonging to a past time—when for hunting purposes all land was held in common—or to a time in the future when such or similar rights shall be restored. Cæsar says of the Suevi that they tilled the ground in common, and had no private lands, and there is abundant evidence that all early human communities before they entered on the stage of modern civilisation were communistic in character. Some of the Pacific Islanders to-day are in the same condition. In those times private property was theft. Obviously the man who attempted to retain for himself land or goods, or who fenced off a portion of the common ground and—like the modern landlord—would allow no one to till it who did not pay him a tax—was a criminal of the deepest die. Nevertheless the criminals pushed their way to the front, and have become the respectables of modern Society. And it is quite probable that in like manner the criminals of to-day will push to the front and become the respectables of a later age.

The ascetic and monastic ideal of early Christian and mediæval ages is now regarded as foolish, if not wicked; and poverty, which in many times and places has been held in honor as the only garb of honesty, is condemned as criminal and indecent. Nomadism—if accompanied by poverty—is criminal in modern Society. To-day the gipsy and the tramp are hunted down. To have no settled habitation, or worse still, no place to lay your head, are suspicious matters. We close even our outhouses and barns against the son of man, and so to us the son of man comes not.

And yet—at one time and in one stage of human progress—the nomadic state is the rule; and the settler is then the criminal. His crops are

fired and his cattle driven off. What right has he to lay a limit to the hunting grounds, or to spoil the wild free life of the plains with his dirty agriculture?

As to the marriage relation and its attendant moralities, the forms are numerous and notorious enough. Public opinion seems to have varied through all phases and ideals, and yet there is no indication of finality. Late investigations show that at an early period in all human societies the marriage tie is very promiscuous—the relation of brother and sister in this respect being rather the rule than the exception; in the present day such a bond as the last-mentioned would be considered inhuman and monstrous.¹ Polyandry prevails among one people or at one time, polygyny prevails among another people or at another time. In Central Africa today the chief offers you his wife as a mark of hospitality, in India the native Prince keeps her hidden even from his most intimate guest. Among the Japanese, public opinion holds young women—even of good birth—singularly free in their intercourse with men, *till they are married*; at Paris they are free after. In the Greek and Roman antiquity marriage seems with some brilliant exceptions to have been a prosaic affair—mostly a matter of convenience and housekeeping—the woman an underling—little of the ideal attaching to the relationship of man and wife. The romance of love went elsewhere. The better class of free women or Hetairai were those who gave a spiritual charm to the passion. They were an educated and recognised body, and possibly in their best times exercised a healthy and discriminating influence upon the male youth. The respectful treatment of Theodota by Socrates, and the advice which he gives her concerning her lovers: to keep the insolent from her door, and to rejoice greatly when the accepted succeed in anything honorable, indicates this. That their influence was at times immense the mere name of Aspasia is sufficient to show; and if Plato in the Symposium reports correctly the words of Diotima, her teaching on the subject of human and divine love was probably of the noblest and profoundest that has ever been given to the world.

With the influx of the North-men over Europe came a new ideal of the sexual relation, and the wife mounted more into equality with her husband than before. The romance of love, however, still went mainly outside marriage, and may I believe be traced in two chief forms—that of Chivalry, as an ideal devotion to pure Womanhood; and that of Minstrelsy, which took quite a different hue, individual and sentimental—the lover and his mistress (she as often as not the wife of another), the seren-

¹ Yet there is no doubt that lasting and passionate love may exist between two persons thus nearly related. The danger to the health of the offspring from occasional in-breeding of the kind appears to arise chiefly from the accentuation of infirmities common to the two parents. In a state of society free from the diseases of the civilisation-period, such a danger would be greatly reduced—and this may partly serve to explain the extensive admission of this custom in savagery.

ade, secret amour, &c.—both of which forms of Chivalry and Minstrelsy contain in themselves something new and not quite familiar to antiquity.

Finally in modern times the monogamic union has risen to pre-eminence—the splendid ideal of an equal and life-long attachment between man and wife, fruitful of children in this life, and hopeful of continuance beyond—and has become the great theme of romantic literature, and the climax of a thousand novels and poems. Yet it is just here and to-day, when this ideal after centuries of struggle has established itself, and among the nations that are in the van of civilisation—that we find the doctrine of perfect liberty in the marriage relationship being most successfully preached, and that the communalization of social life in the future seems likely to weaken the family bond and to relax the obligation of the marriage tie.

If the Greek age, splendid as it was in itself and in its fruits to human progress, did not hold marriage very high, it was partly because the ideal passion of that period, and one which more than all else inspired it, was that of comradeship, or male friendship carried over into the region of love. The two figures of Harmodius and Aristogiton stand at the entrance of Greek history as the type of this passion, bearing its fruit (as Plato throughout maintains is its nature) in united self-devotion to the country's good. The heroic Theban legion, the "sacred band," into which no man might enter without his lover—and which was said to have remained unvanquished till it was annihilated at the battle of Chæronæa—proves to us how publicly this passion and its place in society were recognized; while its universality and the depth to which it had stirred the Greek mind are indicated by the fact that whole treatises on love, in its spiritual aspect, exist, in which no other form of the sentiment seems to be contemplated; and by the magnificent panorama of Greek statuary, which was obviously to a large extent inspired by it. In fact the most remarkable Society known to history, and its greatest men, can not be properly considered or understood apart from this passion; yet the modern world scarcely recognises it, or if it recognises, does so chiefly to condemn it.¹

Other instances might be quoted to show how differently moral questions are regarded in one age and another—as in the case of Usury, Magic, Suicide, Infanticide, &c. On the whole we pride ourselves (and justly I believe) on the general advance in humanity; yet we know that to-day the merest savages can only shudder at a civilisation whose public opinion allows—as amongst us—the rich to wallow in their wealth while the poor are systematically starving; and it is certain that the vivisection of ani-

¹ Modern writers fixing their regard on the physical side of this love (necessary no doubt here, as elsewhere, to define and corroborate the spiritual) have entered their protest as against the mere obscenity into which the thing fell—for instance in the days of **Martial**—but have missed the profound significance of the heroic attachment itself. It is, however, with the ideals that we are just now concerned and not with their disintegration.

mals—which on the whole is approved by our educated classes (though not by the healthier sentiment of the uneducated)—would have been stigmatised as one of the most abominable crimes by the ancient Egyptians—if, that is, they could have conceived such a practice possible at all.

But not only do the moral judgments of mankind thus vary from age to age and from race to race, but—what is equally remarkable—they vary to an extraordinary degree from class to class of the same society. If the landlord class regards the poacher as a criminal, the poacher as already hinted looks upon the landlord as a selfish ruffian who has the police on his side; if the respectable shareholder, politely and respectably subsisting on dividends, dismisses navvies and the frequenters of public-houses as disorderly persons; the navy in return despises the shareholder as a sneaking thief. And it is not easy to see, after all, which is in the right. It is useless to dismiss these discrepancies by supposing that one class in the nation possesses a monopoly of morality and that the other classes simply rail at the virtue they cannot attain to, for this is obviously not the case. It is almost a commonplace, and certainly a fact that cannot be contested, that every class—however sinful or outcast in the eyes of others—contains within its ranks a large proportion of generous, noble, self-sacrificing characters; so that the public opinion of one such class, however different from that of others, cannot at least be invalidated on the above ground. There are plenty of clergymen at this moment who are models of pastors—true shepherds of the people—though a large and increasing section of society persist in regarding priests as a kind of wolves in sheep's clothing. It is not uncommon to meet with professional thieves who are generous and open-handed to the last degree, and ready to part with their last penny to help a comrade in distress; with women living outside the bounds of conventional morality who are strongly religious in sentiment, and who regard atheists as *really* wicked people; with aristocrats who have as stern material in them as quarry-men; and even with bondholders and drawing-room loungers who are as capable of bravery and self-sacrifice as many a pitman or ironworker. Yet all these classes mentioned have their codes of morality, differing in greater or lesser degree from each other; and again the question forces itself upon us: Which of them all is the true and abiding code!

It may be said, with regard to this variation of codes within the same society, that though various codes may exist at the same time, one only is really valid, namely that which has embodied itself in the law—that the others have been rejected because they were unworthy. But when we come to look into this matter of law we see that the plea can hardly be maintained. Law represents from age to age the code of the dominant or ruling class, slowly accumulated, no doubt, and slowly modified, but always added to and always administered by the ruling class. To-day the code of the dominant class may perhaps best be denoted by the word

Respectability—and if we ask why this code has to a great extent overwhelmed the codes of the other classes and got the law on its side (so far that in the main it characterises those classes who do not conform to it as the criminal classes), the answer can only be: Because it is the code of the classes who are in power. Respectability is the code of those who have the wealth and the command, and as these have also the fluent pens and tongues, it is the standard of modern literature and the press. It is not necessarily a better standard than others, but it is the one that happens to be in the ascendant; it is the code of the classes that chiefly represent modern society; it is the code of the Bourgeoisie. It is different from the Feudal code of the past, of the knightly classes, and of Chivalry; it is different from the Democratic code of the future—of brotherhood and of equality; it is the code of the Commercial age—and its distinctive watchword is—property.

The respectability of to-day is the respectability of property. There is nothing so respectable as being well-off. The Law confirms this: everything is on the side of the rich; justice is too expensive a thing for the poor man. Offences against the person hardly count for so much as those against property. You may beat your wife within an inch of her life and only get three months; but if you steal a rabbit, you may be “sent” for years. So again gambling by thousands on Change is respectable enough, but pitch and toss for half-pence in the streets is low, and must be dealt with by the police; while it is a mere commonplace to say that the high-class swindler is “received” in society from which a more honest but patch-coated brother would infallibly be rejected. As Walt Whitman has it, “There is plenty of glamour about the most damnable crimes and hoggish meannesses, special and general, of the feudal and dynastic world over there, with its personnel of lords and queens and courts, so well-dressed and handsome. But the people are ungrammatical, untidy, and their sins gaunt and ill-bred.”

Thus we see that though there are for instance in the England of to-day a variety of classes, and a variety of corresponding codes of public opinion and morality, one of these codes, namely that of the ruling class whose watchword is property, is strongly in the ascendant. And we may fairly suppose that in any nation from the time when it first becomes divided into well-marked classes this is or has been the case. In one age—the commercial age—the code of the commercial or money-loving class is dominant; in another—the military—the code of the warrior class is dominant; in another—the religious—the code of the priestly class; and so on. And even before any question of division into classes arises, while races are yet in a rudimentary and tribal state, the utmost diversity of custom and public opinion marks the one from the other.

What, then, are we to conclude from all these variations (and the far greater number which I have not mentioned) of the respect or stigma attaching to the *same* actions, not only among different societies in differ-

ent ages or parts of the world, but even at any one time among different classes of the same society? Must we conclude that there is no such thing as a permanent moral code valid for all time; or must we still suppose that there is such a thing—though society has hitherto sought for it in vain?

I think it is obvious that there is no such thing as a permanent moral code—at any rate as applying to *actions*. Probably the respect or stigma attaching to particular classes of actions arose from the fact that these classes of actions were—or were thought to be—beneficial or injurious to the society of the time; but it is also clear that this good or bad name once created clings to the action long after the action has ceased in the course of social progress to be beneficial in the one case, or injurious in the other; and indeed long after the thinkers of the race have discovered the discrepancy. And so in a short time arises a great confusion in the popular mind between what is really good or evil for the race and what is reputed to be so—the bolder spirits who try to separate the two having to atone for this confusion by their own martyrdom. It is also pretty clear that the actions which are beneficial or injurious to the race must by the nature of the case vary almost indefinitely with the changing conditions of the life of the race—what is beneficial in one age or under one set of conditions being injurious in another age or under other circumstances—so that a permanent or ever valid code of moral action is not a thing to be expected, at any rate by those who regard morality as a result of social experience, and as a matter of fact is not a thing that we find existing. And, indeed, of those who regard morals as intuitive, there are few who have thought about the matter who would be inclined to say that any *act* in itself can be either right or wrong. Though there is a superficial judgment of this kind, yet when the matter comes to be looked into, the more general consent seems to be that the rightness or wrongness is in the *motive*. To kill (it is said) is not wrong, but to do so with murderous intent is; to take money out of another person's purse is in itself neither moral nor immoral—all depends upon whether permission has been given, or on what the relations between the two persons are; and so on. Obviously there is no mere act which under given conditions may not be justified, and equally obviously there is no mere act which under given conditions may not become unjustifiable. To talk, therefore, about virtues and vices as permanent and distinct classes of actions is illusory: there is no such distinction, except so far as a superficial and transient public opinion creates it. The theatre of morality is in the passions, and there are (it is said) virtuous and vicious passions—eternally distinct from each other.

Here, then, we have abandoned the search for a permanent moral code among the actions; on the understanding that we are more likely to find such a thing among the passions. And I think it would be generally admitted that this is a move in the right direction. There are difficulties

however here, and the matter is not one which renders itself up at once. Though, vaguely speaking, some passions seem nobler and more dignified than others, we find it very difficult, in fact, impossible, to draw any strict line which shall separate one class, the virtuous, from the other class, the vicious. On the whole we place Prudence, Generosity, Chastity, Reverence, Courage, among the virtues—and their opposites, as rashness, Miserliness, Incontinence, Arrogance, Timidity, among the vices; yet we do not seem able to say that Prudence is always better than Rashness, Chastity than Incontinence, or Reverence than Arrogance. There are situations in which the less honored quality is the most in place; and if the extreme of this is undesirable, the extreme of its opposite is undesirable too. Courage, it is commonly said, must not be carried over into foolhardiness; Chastity must not go so far as the monks of the early Church took it; there is a limit to the indulgence of the instinct of Reverence. In fact the less dignified passions are necessary sometimes as a counter-balance and set-off to the more dignified, and a character devoid of them would be very insipid: just as among the members of the body, the less honored have their place as well as the more honored, and could not well be discarded.

Hence a number of writers, abandoning the attempt to draw a fixed line between virtuous and vicious passions, have boldly maintained that vices have their place as well as virtues, and that the true salvation lies in the golden mean. The *ἐπιείκεια* and *σωφροσύνη* of the Greeks seems to have pointed to the idea of a blend or harmonious adjustment of all the powers as the perfection of character. On a Greek memorial tablet at Naples (in the Museum, I think) is the following inscription: *Μνημα φιλοσωφροσύνης Ἀστῆ τὸδε Δάφνις ἔτευξε, καὶ ζῶσαν στέρας καὶ φημένην ποθέων*—“To Aste, for a memorial of her gentleness, Daphnis framed this—having loved her dearly in life, and longing for her now she is dead.”

The English word “gentleman” seems to have once conveyed a similar idea. And Emerson, among others, maintains that each vice is only the “excess or acridity of a virtue,” and says “the first lesson of history is the good of evil.”

According to this view rightness or wrongness cannot be predicated of the passions themselves, but should rather be applied to the use of them, and to the way they are proportioned to each other and to circumstances. As, farther back, we left the region of actions to look for morality in the passions that lie behind action, so now we leave the region of the passions to look for it in the power that lies behind the passions and gives them their place. This is a farther move in the same direction as before, and possibly will bring us to a more satisfactory conclusion. There are still difficulties, however—the chief ones lying in the want of definiteness which necessarily attaches to our dealings with these remoter tracts of human nature; and in our own defective knowledge of these tracts.

For these reasons, and as the subject is a complex and difficult one, I

would ask the reader to dwell for a few minutes longer on the considerations which show that it is really as impossible to draw a fixed line between moral and immoral passions as it is between moral and immoral actions, and which therefore force us, if we are to find any ground of morality at all, to look for it in some further region of our nature.

Plato in his allegory of the soul—in the *Phædrus*—though he apparently divides the passions which draw the human chariot into two classes, the heavenward and the earthward—figured by the white horse and the black horse respectively—does not recommend that the black horse should be destroyed or dismissed, but only that he (as well as the white horse) should be kept under due control by the charioteer. By which he seems to intend that there is a power in man which stands above and behind the passions, and under whose control alone the human being can safely move. In fact if the fiercer and so-called more earthly passions were removed, half the driving force would be gone from the chariot of the human soul. Hatred may be devilish at times—but after all the true value of it depends on what you hate, on the use to which the passion is put. Anger though inhuman at one time is magnificent at another. Obstinacy may be out of place in a drawing-room, but it is the latest virtue on a battle-field when an important position has to be held against the full brunt of the enemy. And Lust, though maniacal and monstrous in its aberrations, cannot in the last resort be separated from its divine companion, Love. To let the more amiable passions have entire sway notoriously does not do : to turn your cheek, too literally, to the smiter, is (*pace* Tolstoi) only to encourage smiting ; and when society becomes so altruistic that everybody runs to fetch the coal-scuttle we feel sure that something has gone wrong. The white-washed heroes of our biographies with their many virtues and no faults do not please us. We have an impression that the man without faults is, to say the least, a vague, uninteresting being—a picture without light and shade—and the conventional semi-pious classification of character into good and bad qualities (as if the good might be kept and the bad thrown away) seems both inadequate and false.

What the student of human nature rather has to do is not to divide the virtues (so-called) from the vices (so-called), not to separate the black horse and the white horse, but to find out what is the relation of the one to the other—to see the character as a whole, and the mutual interdependence of its different parts—to find out what that power is which constitutes it a unity, whose presence and control makes the man and all his actions “right,” and in whose absence (if it is really possible for it to be entirely absent) the man and his actions must be “wrong.”

What we call vices, faults, defects, appear often as a kind of limitation : cruelty, for instance, as a limitation of human sympathy, prejudice as a blindness, a want of discernment ; but it is just these limitations—in one form or another—which are the necessary conditions of the appearance

of a human being in the world. If we are to act or live at all we must act and live under limits. There must be channels along which the stream is forced to run, else it will spread and lose itself aimlessly in all directions—and turn no mill-wheels. One man is disagreeable and un-conciliatory—the directions in which his sympathy goes out to others are few and limited—yet there are situations in life (and everyone must know them) when a man who is *able and willing* to make himself disagreeable is invaluable : when a Carlyle is worth any number of Balaams.

Sometimes again vices, &c., appear as a kind of raw material from which the other qualities have to be formed, and without which, in a sense, they could not exist. Sensuality, for instance, underlies all art and the higher emotions. Timidity is the defect of the sensitive imaginative temperament. Bluntness, stupid candor, and want of tact are indispensable in the formation of certain types of Reformers. But what would you have? Would you have a rabbit with the horns of a cow, or a donkey with the disposition of a spaniel? The reformer has not to extirpate his brusqueness and aggressiveness, but to see that he makes good use of these qualities ; and the man has not to abolish his sensuality, but to humanise it.

And so on. Lecky, in his "History of Morals," shows how in society certain defects necessarily accompany certain excellencies of character. "Had the Irish peasants been less chaste they would have been more prosperous," is his blunt assertion, which he supports by the contention that their early marriages (which render the said virtue possible) "are the most conspicuous proofs of the national improvidence, and one of the most fatal obstacles to industrial prosperity." Similarly he says that the gambling table fosters a moral nerve and calmness "scarcely exhibited in equal perfection in any other sphere"—a fact which Bret Harte has finely illustrated in his character of Mr. John Oakhurst in the "Outcasts of Poker Flat;" also that "the promotion of industrial veracity is probably the single form in which the growth of manufactures exercises a favorable influence upon morals;" while, on the other hand, "Trust in Providence, content and resignation in extreme poverty and suffering, the most genuine amiability, and the most sincere readiness to assist their brethren, an adherence to their religious opinions which no persecutions and no bribes can shake, a capacity for heroic, transcendent, and prolonged self-sacrifice, may be found in some nations, in men who are habitual liars and habitual cheats." Again he points out that thriftiness and forethought—which, in an industrial civilisation like ours, are looked upon as duties "of the very highest order"—have at other times (when the teaching was "take no thought for the morrow") been regarded as quite the reverse, and concludes with the general remark that as society advances there is some loss for every gain that is made, and with the special indictment against "civilisation" that it is not favorable to the production of "self-sacrifice, enthusiasm, reverence, or chastity"

The point of all which is that the so-called vices and defects—whether we regard them as limitations or whether we regard them as raw materials of character, whether we regard them in the individual solely or whether we regard them in their relation to society—are necessary elements of human life, elements without which the so-called virtues could not exist ; and that therefore it is quite impossible to separate vices and virtues into distinct classes with the latent idea involved that one class may be retained and the other in course of time got rid of. Defects and bad qualities will not be treated so—they clamor for their rights and will not be denied ; they effect a lodgment in us, and we have to put up with them. Like the grain of sand in the oyster, we are forced to make pearls of them.

These are the precipices and chasms which give form to the mountain. Who wants a mountain sprawling indifferently out on all sides, without angle or break, like the oceanic tide-wave of which one cannot say whether it is a hill or a plain? And if you want to grow a lily, chastely white and filling the air with its fragrance, will you not bury the bulb of it deep in the dirt to begin with?

Acknowledging, then, that it is impossible to hold permanently to any line of distinction between good and bad passions, there remains nothing for it but to accept both, and to *make use* of them—redeeming them, both good and bad, from their narrowness and limitation by so doing—to make use of them in the service of humanity. For as dirt is only matter in the wrong place, so evil in man consists only in actions or passions which are uncontrolled by the human within him, and undedicated to its service. The evil consists not in the actions or passions themselves, but in the fact that they are inhumanly used. The most unblemished virtue erected into a barrier between one-self and a suffering brother or sister—the whitest marble image, howsoever lovely, set up in the Holy Place of the temple of Man, where the spirit alone should dwell—becomes blasphemy and a pollution.

Wherein exactly this human service consists is another question. It may be, and, as the reader would gather, probably is, a matter which at the last eludes definition. But though it may elude exact statement, that is no reason why approximations should not be made to the statement of it ; nor is its ultimate elusiveness of intellectual definition any proof that it may not become a real and vital force within the man, and underlying inspiration of his actions. To take the two considerations in order. In the first place, as we saw from the beginning, the experience of society is continually leading it to classify actions into beneficial and harmful, good and bad ; and thus moral codes are formed which eat their way from the outside into the individual man and become part of him. These codes may be looked upon as approximations in each age to a statement of human service ; but, as we have seen, they are by the nature of the case very imperfect ; and since the very conditions of the problem are continually changing, it seems obvious that a final and absolute solution

of it by this method is impossible. The second way in which man works towards a solution is by the expansion and growth of his own consciousness, and is ultimately by far the most important—though the two methods have doubtless continually to be corrected by each other. In fact, as man actually forms a part of society externally, so he comes to know and *feel* himself a part of society through his inner nature. Gradually, and in the lapse of ages, through the development of his sympathetic relation with his fellows, the individual man enters into a wider and wider circle of life—the joys and sorrows, the experiences, of his fellows become his own joys and sorrows, his own experiences—he passes into a life which is larger than his own individual life—forces flow in upon him which determine his actions, not for results which return to him directly, but for results which can only return to him indirectly and through others; at last the ground of humanity, as it were, reveals itself within him, the region of human equality—and his actions come to flow directly from the very same source which regulates and inspires the whole movement of Society. At this point the problem is solved. The growth has taken place from within; it is not of the nature of an external compulsion, but of an inward compunction. By actual consciousness the man has taken on an ever-enlarging life, and at last the life of humanity, which has no fixed form, no ever-valid code; but is itself the true life, surpassing definition, yet inspiring all actions and passions, all codes and forms, and determining at last their place.

It is the gradual growth of this supreme life in each individual which is the great and indeed the only hope of Society—it is that for which Society exists: a life which so far from dwarfing individuality enhances immensely its power, causing the individual to move with the weight of the universe behind him—and exalting what were once his little peculiarities and defects into the splendid manifestations of his humanity.

To return then for a moment to the practical bearing of this on the question before us, we see that so soon as we have abandoned all codes of morals there remains nothing for us but to put *all* our qualities and defects to human use, and to redeem them by so doing. Our defects are our entrances into life, and the gateway of all our dealings with others. Think what it is to be plain and *homely*. The very word suggests an endearment and a liberty of access denied to the faultlessly handsome. Our very evil passions, so called, are not things to be ashamed of, but things to look straight in the face and to see what they are good for—for a use can be found for them, that is certain. The man should see that he is worthy of his passion, as the mountain should rear its crest conformable to the height of the precipice which bounds it. Is it women? let him see that he is a magnanimous lover. Is it ambition? let him take care that it be a grand one. Is it laziness? let it redeem him from the folly of unrest, to become heaven-reflecting, like a lake among the hills. Is it closefistedness? let it become the nurse of a true economy.

The more complicated, pronounced, or awkward the defect is the finer will be the result when it has been thoroughly worked up. Love of approbation is difficult to deal with. Through sloughs of duplicity, of concealment, of vanity, it leads its victim. It sucks his sturdy self-life, and leaves him flattened and bloodless. Yet once mastered, once fairly torn out, cudged, and left bleeding on the road (for this probably has to be done with every vice or virtue some time or other), it will rise up and follow you, carrying a magic key round its neck, meek and serviceable now, instead of dangerous and demoniac as before.

Deceit is difficult to deal with. In some sense it is the worst fault that can be. It seems to disorganise and ultimately to destroy the character. Yet I am bold to say that this defect has its uses. Severely examined perhaps it will be found that no one can live a day free from it. And beyond that—is not “a noble dissimulation” part and parcel of the very greatest characters: like Socrates, “the white soul in a satyr form?” When the divine has descended among men has it not always like Moses worn a veil before its face? and what is Nature herself but one long and organised system of deception?

Veracity has an opposite effect. It knits all the elements of a man’s character—rendering him solid rather than fluid; yet carried out too literally and pragmatically it condenses and solidifies the character overmuch, making the man wooden and angular. And even of that essential Truth (truth to the inward and ideal perfection) which more than anything else perhaps *constitutes* a man—it is to be remembered that even here there must be a limitation. No man can in act or externally be quite true to the ideal—though in spirit he may be. If he is to live in this world and be mortal, it must be by virtue of some partiality, some defect.

And so again—since there is an analogy between the Individual and Society—may we not conclude that as the individual has ultimately to recognise his so-called evil passions and find a place and a use for them, Society also has to recognise its so-called criminals and discern their place and use? The artist does not omit shadows from his canvas; and the wise statesman will not try to abolish the criminal from Society—lest haply he be found to have abolished the driving force from his social machine.¹

From what has now been said it is quite clear that in general we call a man a criminal, not because he violates any eternal code of morality—for there exists no such thing—but because he violates the ruling code of his time, and this depends largely on the ideal of the time. The Spartans appear to have permitted theft because they thought that thieving habits in the community fostered military dexterity and discouraged the accumulation of private wealth. They looked upon the latter as a great evil.

But to-day the accumulation of private wealth is our great good and the thief is looked upon as the evil. When however we find, as the his-

¹ The derivation of the word “wicked” seems uncertain. May it be suggested that it is connected with “wick” or “quick,” “meaning *alive*?”

torians of to-day teach us, that society is now probably passing through a parenthetical stage of private property from a stage of communism in the past to a stage of more highly developed communism in the future, it becomes clear that the thief (and the poacher before-mentioned) is that person who is protesting against the too-exclusive domination of a passing ideal. Whatever should we do without him? He is keeping open for us, as Hinton I think expresses it, the path to a regenerate society, and is more useful to that end than many a platform orator. He it is that makes Care to sit upon the Crupper of Wealth, and so, in course of time, causes the burden and bother of private property to become so intolerable that Society gladly casts it down on common ground. Vast as is the machinery of Law, and multifarious the ways in which it seeks to crush the thief, it has signally failed, and fails ever more and more. The thief will win. He will get what he wants, but (as usual in human life!) in a way and in a form very different from what he expected.

And when we regard the thief in himself, we cannot say that we find him less human than other classes of Society. The sentiment of large bodies of thieves is highly communistic among themselves; and if they thus represent a survival from an earlier age, they might also be looked upon as the precursors of a better age in the future. They have their pals in every town, with runs and refuges always open, and are lavish and generous to a degree to their own kind. And if they look upon the rich as their natural enemies and fair prey, a view which it might be difficult to gainsay, many of them at any rate are animated by a good deal of the Robin Hood spirit, and are really helpful to the poor.

I need not I think quote that famous passage from Lecky in which he shows how the prostitute, through centuries of suffering and ill-fame, has borne the curse and contempt of Society in order that her more fortunate sister might rejoice in the achievement of a pure marriage. The ideal of a monogamic union has been established in a sense directly by the slur cast upon the free woman. If, however, as many people think, a certain latitude in sexual relations is not only admissible but in the long run, and within bounds, desirable, it becomes clear that the prostitute is that person who against heavy odds, and at the cost of a real degradation to herself, has clung to a tradition which, in itself good, might otherwise have perished in the face of our devotion to the splendid ideal of the exclusive marriage. There has been a time in history when the prostitute (if the word can be properly used in this connection) has been glorified, consecrated to the temple service and honored of men and gods (the hierodouloi of the Greeks, the kodeshoth and kodeshim of the Bible, &c.) There has also been a time when she has been scouted and reviled. In the future there will come a time when, as free companions, really free from the curse of modern commercialism, and sacred and respected once more, she will again be accepted by Society and take her place with the rest.

And so with other cases. On looking back into history we find that

almost every human impulse has at some age been held in esteem and allowed full play; thus man came to recognise its beauty and value. But then lest it should come (as it surely would) to tyrannise over the rest, it has been dethroned, and so in a later age the same quality is scouted and banned. Last of all it has to find its perfect human use and to take its place with the rest. Up to the age of Civilisation (according to writers on primitive Society) the early tribes of mankind, though limited each in their habits, were essentially democratical in structure. In fact nothing had occurred to make them otherwise. Each member stood on a footing of equality with the rest; individual men had not in their hands an arbitrary power over others; and the tribal life and standard ruled supreme. And when, in the future and on a much higher plane, the true Democracy comes, this equality which has so long been in abeyance will be restored, not only among men but also, in a sense, among all the passions and qualities of manhood: none will be allowed to tyrannise over others, but all will have to be subjects to the supreme life of humanity. The chariot of Man instead of two horses will have a thousand; but they will all be under control of the charioteer. Meanwhile it may not be extravagant to suppose that all through the Civilisation period the so-called criminals are keeping open the possibility of a return to this state of society. They are preserving, in a rough and unattractive husk it may be, the precious seed of a life which is to come in the future; and are as necessary and integral a part of Society in the long run as the most respected and most honored of its members at present.

The upshot then of it all is that "morals" as a code of action have to be discarded. There exists no such code, at any rate for permanent use. One age, one race, one class, one family, may have a code which the users of it consider valid, but only they consider it valid, and they only for a time. The Decalogue may have been a rough and useful ready-reckoner for the Israelites; but to us it admits of so many exceptions and interpretations that it is practically worthless. "Thou shalt not steal." Exactly; but who is to decide, as we saw at the outset, in what "stealing" consists? The question is too complicated to admit of an answer. And when we *have* caught our half-starved tramp "snaking" a loaf, and are ready to condemn him, lo! Lyncurgus pats him on the back, and the modern philosopher tells him that he is keeping open the path to a regenerate Society! If the tramp had also been a philosopher he would perhaps have done the same act not merely for his own benefit but for that of Society, he would have committed a crime in order to save mankind.

There is nothing left but Humanity. Since there is no ever-valid code of morals we must sadly confess that there is no means of proving ourselves right and our neighbors wrong. In fact the very act of thinking whether *we* are right (which implies a sundering of ourselves, even in thought, from others) itself introduces the element of wrongness; and if

we are ever to *be* "right" at all, it must be at some moment when we fail to notice it—when we have forgotten our apartness from others and have entered into the great region of human equality. Equality—in that region all human defects are redeemed; they all find their place. To love your neighbor *as* yourself is the whole law and the prophets; to feel that you are "equal" with others, that their lives are as your life, that your life is as theirs—even in what trifling degree we may experience such things—is to enter into another life which includes both sides; it is to pass beyond the sphere of moral distinctions, and to trouble oneself no more with them. Between lovers there are no duties and no rights; and in the life of humanity, there is only an instinctive mutual service expressing itself in whatever way may be best at the time. Nothing is forbidden, there is nothing which may not serve. The law of Equality is perfectly flexible, is adaptable to all times and places, finds a place for all the elements of character, justifies and redeems them all without exception; and to live by it is perfect freedom. Yet not a law; but rather as said, a new life, transcending the individual life, working through it from within, lifting the self into another sphere, beyond corruption, far over the world of Sorrow.

The effort to make a distinction between acting for self and acting for one's neighbor is the basis of "morals." As long as a man feels an ultimate antagonism between himself and Society, as long as he tries to hold his own life as a thing apart from that of others, so long must the question arise whether he will act for self *or* for those others. Hence flow a long array of terms—distinctions of right and wrong, duty, selfishness, self-renunciation, altruism, etc. But when he discovers that there is no ultimate antagonism between himself and Society; when he finds that the gratification of every desire which he has or can have may be rendered social, or beneficial to his fellows, by being used at the right time and place, and on the other hand that every demand made upon him by Society will and must gratify some portion of his nature, some desire of his heart—why, all the distinctions collapse again; they do not hold water any more. A larger life descends upon him which includes both sides, and prompts actions in accordance with an unwritten and unimagined law. Such actions will sometimes be accounted "selfish" by the world; sometimes they will be accounted "unselfish;" but they are neither, or—if you like—both; and he who does them concerns himself not with the names that may be given to them. The law of Equality includes all the moral codes, and is the stand-point which they cannot reach, but which they all aim at.

Judged by this final standard then, it may doubtless fairly be said—since we all fall short of it—that we are all criminals, and deserve a good hiding; and even that some of us are greater criminals than others. Only of this real criminality the actual moral and legal codes afford but ineffectual tests. I may be a far worse or more self-included ("idiotic" or bru-

tal) man than you, but the mere fact that I have violated the laws and been clapped into prison does not prove it. There may be, probably is, a real and eternal difference represented by the words Right and Wrong, but no statement that we can make will ever quite avail to define it. One use, however, of all these laws and codes in the past, imperfect though they were, may have been to gradually excite the consciousness in the individual of his opposition to Society, and so prepare the way of a true reconciliation. As Paul says "I had not known sin, but by the law," and if we had not been cudgelled and bruised for centuries by this rough bludgeon of social convention we should not now be so sensitive as we are to the effect of our actions upon our neighbors, nor so ready for a social life in the future which shall be superior to law.

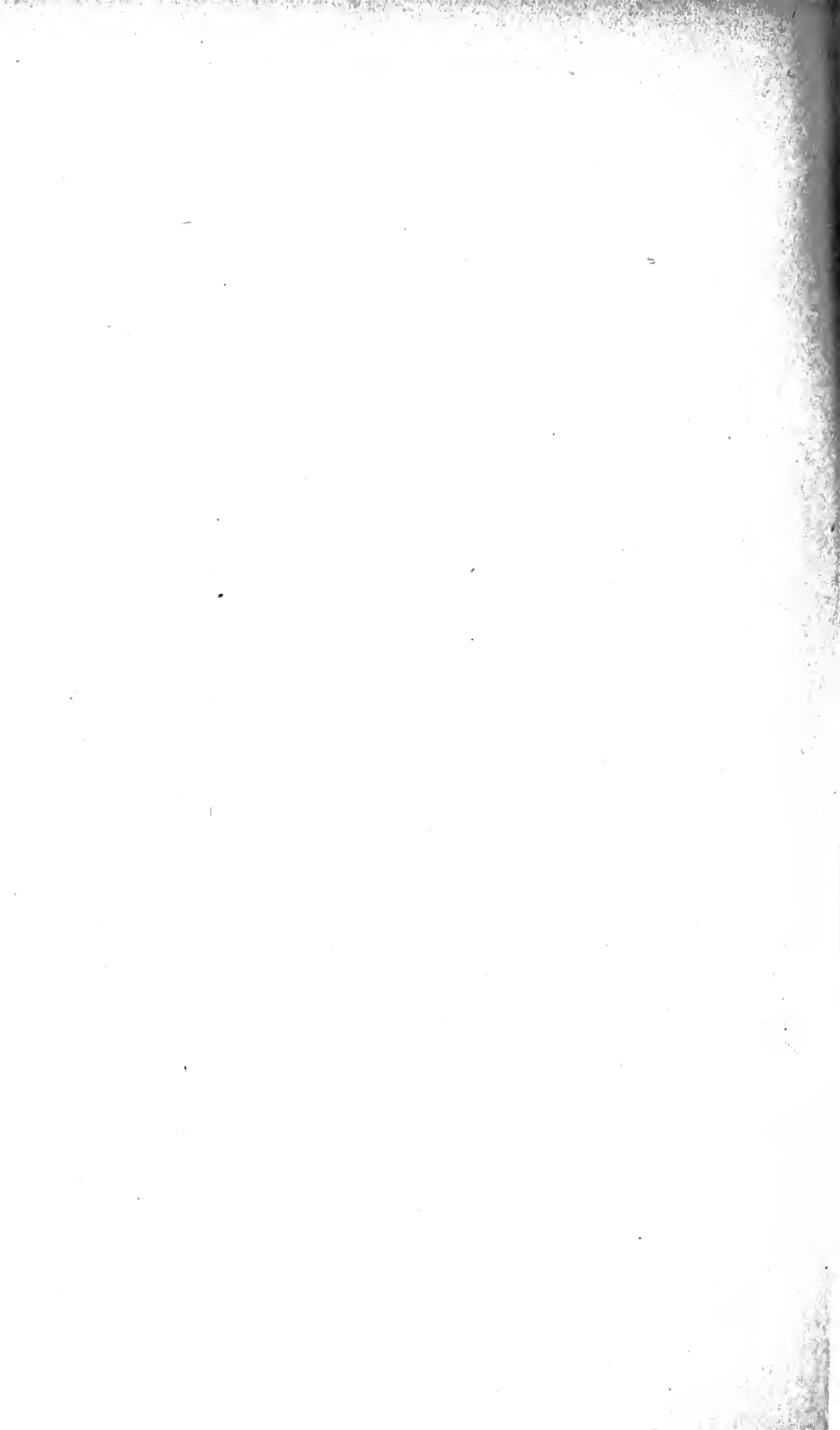
Of course the ultimate reconciliation of the individual with Society—of the unit Man with the mass-Man—involves the subordination of the desires, their subjection to the true self. And this is a most important point. It is no easy lapse that is here suggested, from morality into a mere jungle of human passion; but a toilsome and long ascent—involving for a time at any rate a determined self-control—into ascendancy over the passions; it involves the complete mastery, one by one, of them all; and the recognition and allowance of them only because they are mastered. And it is just this training and subjection of the passions—as of winged horses which are to draw the human chariot—which necessarily forms such a long and painful process of human evolution. The old moral codes are a part of this process; but they go on the plan of extinguishing some of the passions—seeing that it is sometimes easier to shoot a restive horse than to ride him. We however do not want to be lords of dead carrion but of living powers; and every steed that we can add to our chariot makes our progress through creation so much the more splendid, providing Phoebus indeed holds the reins, and not the incapable Phaeton.

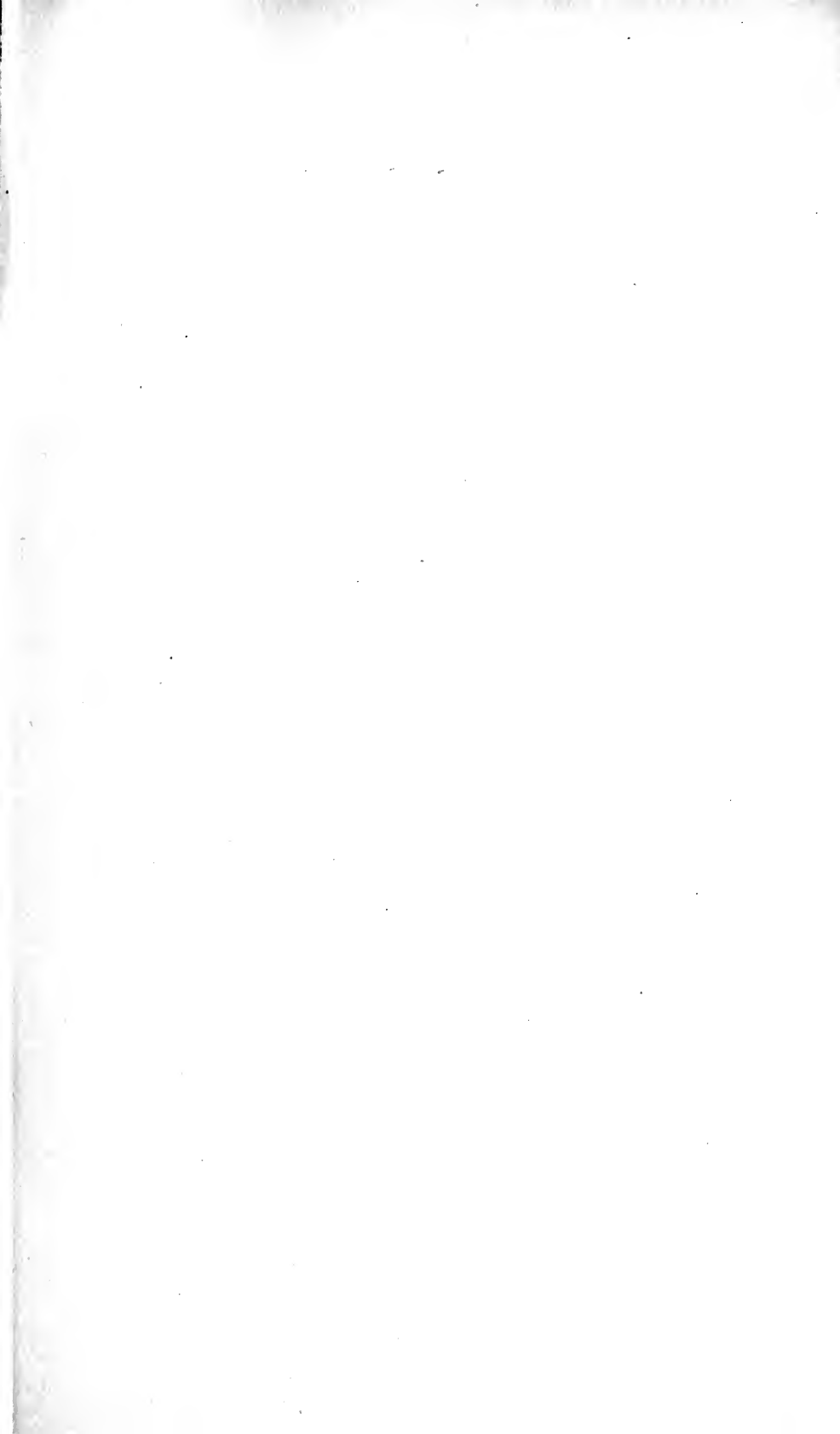
And by becoming thus one with the social self, the individual instead of being crushed is made far vaster, far grander than before. The renunciation (if it must be so called) which he has to accept in abandoning merely individual ends is immediately compensated by the far more vivid life he now enters into. For every force of his nature can now be utilised. Planting himself out by contrast, he stands all the firmer because he has a left foot as well as a right, and when he acts, he acts not half-heartedly as one afraid, but, as it were, with the whole weight of Humanity behind him. In abandoning his exclusive individuality he becomes for the first time a real and living individual; and in accepting as his own the life of others he becomes aware of a life in himself that has no limit and no end. That the self of any one man is capable of an infinite gradation from the most petty and exclusive existence to the most magnificent and inclusive seems almost a truism. The one extreme is disease and death, the other is life everlasting. When the tongue for example—which is a member of the body—regards itself as a purely separate existence for itself alone. it

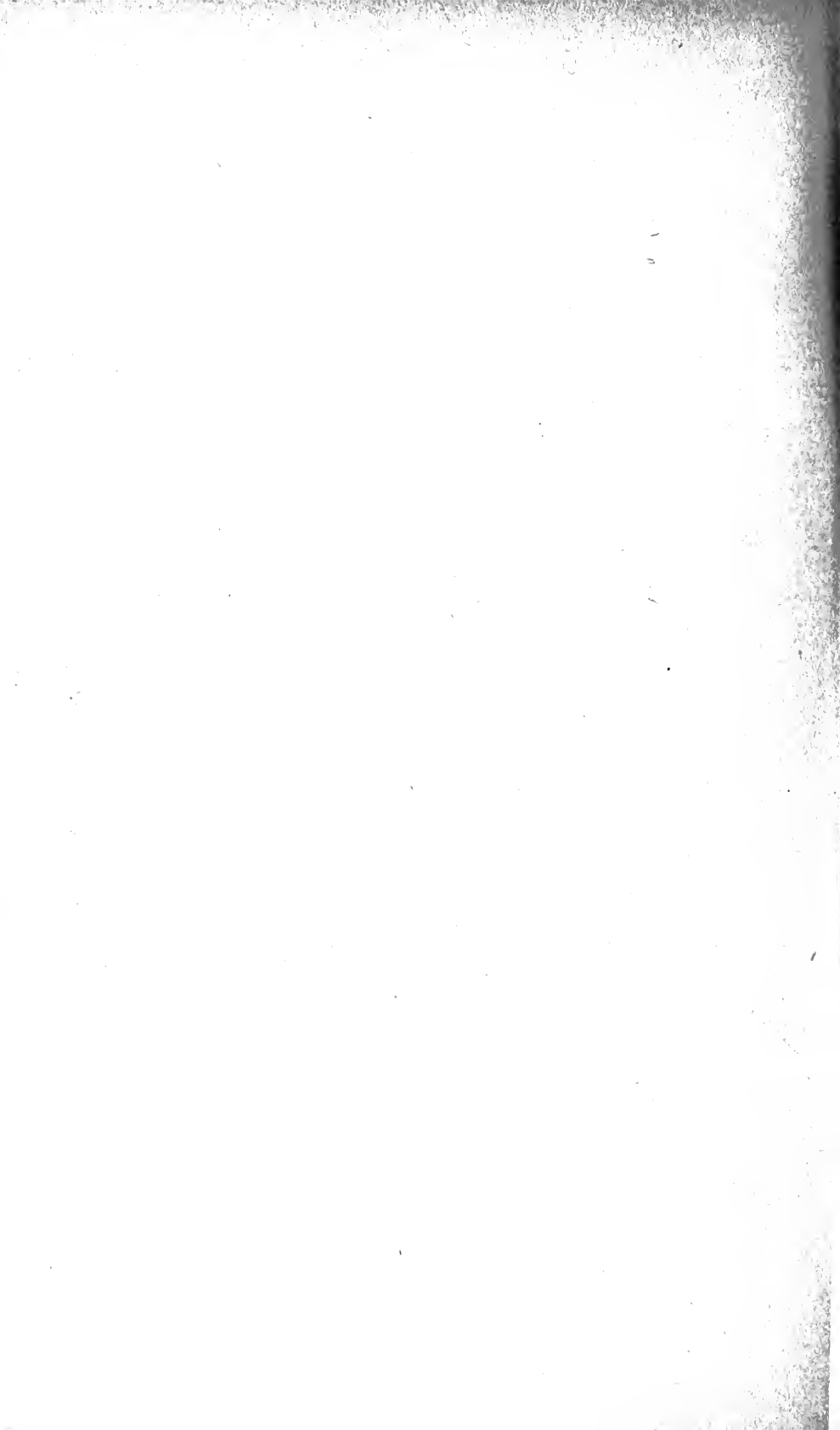
makes a mistake, it suffers an illusion, and descends into its pettiest life. What is the consequence? Thinking that it exists apart from the other members, it selects food just such as shall gratify its most local self, it endeavors just to titillate its own sense of taste; and living and acting thus, ere long it ruins that very sense of taste, poisons the system with improper food, and brings about disease and death. Yet if healthy how does the tongue act? Why, it does not run counter to its own sense of taste, or stultify itself. It does not talk about sacrificing its own inclinations for the good of the body and the other members: but it just acts as being one in interest with them and they with it. For the tongue *is* a muscle, and therefore what feeds it feeds all the other muscles; and the membrane of the tongue *is* a prolongation of the membrane of the stomach, and that is how the tongue knows what the stomach will like; and the tongue *is* nerves and blood, and so the tongue may act for nerves and blood all over the body, and so on. Therefore the tongue may enter into a wider life than that represented by the mere local sense of taste, and experiences more pleasure often in the drinking of a glass of water which the whole body wants, than in the daintiest sweetmeat which is for itself alone.

Exactly so man in a healthy state does not act for himself alone, practically cannot do so. Nor does he talk cant about "serving his neighbors," &c. But he simply acts for them as well as for himself, because they are part and parcel of his life—bone of his bone and flesh of his flesh; and in doing so he enters into a wider life, finds a more perfect pleasure, and becomes more really a man than ever before. Every man contains in himself the elements of all the rest of humanity. They lie in the background; but they are there. In the front he has his own special faculty developed—his individual facade, with its projects, plans and purposes: but behind sleeps the Demos-life with far vaster projects and purposes. Some time or other to every man must come the consciousness of this vaster life.

The true Democracy, wherein this larger life will rule society from within—obviating the need of an external government—and in which all characters and qualities will be recognized and have their freedom, waits (a hidden but necessary result of evolution) in the constitution of human nature itself. In the pre-Civilisation period these vexed questions of "morals" practically did not exist; simply because in that period the individual was one with his tribe and moved (unconsciously) by the larger life of his tribe. And in the post-Civilisation period, when the true Democracy is realised, they will not exist, because then the man will know himself a part of humanity at large, and will be consciously moved by forces belonging to these vaster regions of his being. The moral codes and questionings belong to Civilisation, they are part of the forward effort, the struggle, the suffering, and the temporary alienation from true life, which that term implies.







CATALOGUE OF THE HUMBOLDT LIBRARY OF POPULAR SCIENCE.

Containing the works of the foremost scientific writers of the age.—The Great Classics of Modern Thought.—Strong meat for them that are of full age.

Single numbers 15 cents.

Double numbers 30 cents.

- | | |
|--|--|
| <p>No. 1. Light Science for Leisure Hours. A series of familiar essays on astronomical and other natural phenomena. By Richard A. Proctor, F.R.A.S.</p> <p>No. 2. Forms of Water in Clouds and Rivers, Ice and Glaciers. (19 illustrations). By John Tyndall, F.R.S.</p> <p>No. 3. Physics and Politics. An application of the principles of Natural Science to Political Society. By Walter Bagehot, author of "The English Constitution."</p> <p>No. 4. Man's Place in Nature, (with numerous illustrations). By Thomas H. Huxley, F.R.S.</p> <p>No. 5. Education, Intellectual, Moral, and Physical. By Herbert Spencer.</p> <p>No. 6. Town Geology. With Appendix on Coral and Coral Reefs. By Rev. Charles Kingsley.</p> <p>No. 7. The Conservation of Energy, (with numerous illustrations). By Balfour Stewart, LL.D.</p> <p>No. 8. The Study of Languages, brought back to its true principles. By C. Marcel.</p> <p>No. 9. The Data of Ethics. By Herbert Spencer.</p> <p>No. 10. The Theory of Sound in its Relation to Music, (numerous illustrations), By Prof. Pietro Blaserna.</p> <p>No. 11. The Naturalist on the River Amazons. A record of 11 years of travel. By Henry Walter Bates, F.L.S. (Not sold separately).</p> <p>No. 12. Mind and Body. The theories of their relations. By Alex. Bain, LL.D.</p> <p>No. 13. The Wonders of the Heavens, (thirty-two illustrations). By Camille Flammarion.</p> <p>No. 14. Longevity. The means of prolonging life after middle age. By John Gardner, M.D.</p> <p>No. 15. The Origin of Species. By Thomas H. Huxley, F.R.S.</p> <p>No. 16. Progress: Its Law and Cause. With other disquisitions. By Herbert Spencer.</p> <p>No. 17. Lessons in Electricity, (sixty illustrations). By John Tyndall, F.R.S.</p> <p>No. 18. Familiar Essays on Scientific Subjects. By Richard A. Proctor.</p> <p>No. 19. The Romance of Astronomy. By R. Kaley Miller, M.A.</p> <p>No. 20. The Physical Basis of Life, with other essays. By Thomas H. Huxley, F.R.S.</p> | <p>No. 21. Seeing and Thinking. By William Kingdon Clifford, F.R.S.</p> <p>No. 22. Scientific Sophisms. A review of current theories concerning Atoms, Apes and Men. By Samuel Wainwright, D.D.</p> <p>No. 23. Popular Scientific Lectures, (numerous illustrations). By Prof. H. Helmholtz.</p> <p>No. 24. The Origin of Nations. By Prof. Geo. Rawlinson, Oxford University.</p> <p>No. 25. The Evolutionist at Large. By Grant Allen.</p> <p>No. 26. The History of Landholding in England. By Joseph Fisher, F.R.H.S.</p> <p>No. 27. Fashion in Deformity, as illustrated in the customs of Barbarous and Civilized Races. (numerous illustrations). By William Henry Flower, F.R.S.</p> <p>No. 28. Facts and Fictions of Zoology, (numerous illustrations). By Andrew Wilson, Ph.D.</p> <p>No. 29. The Study of Words. Part I. By Richard Chenevix Trench.</p> <p>No. 30. The Study of Words. Part II.</p> <p>No. 31. Hereditary Traits and other Essays. By Richard A. Proctor.</p> <p>No. 32. Vignettes from Nature. By Grant Allen.</p> <p>No. 33. The Philosophy of Style. By Herbert Spencer.</p> <p>No. 34. Oriental Religions. By John Caird, Pres. Univ. Glasgow, and Others.</p> <p>No. 35. Lectures on Evolution. (Illustrated.) By Prof. T. H. Huxley.</p> <p>No. 36. Six Lectures on Light. (Illustrated.) By Prof. John Tyndall.</p> <p>No. 37. Geological Sketches. Part I. By Archibald Geikie, F.R.S.</p> <p>No. 38. Geological Sketches. Part II.</p> <p>No. 39. The Evidence of Organic Evolution. By George J. Romanes, F.R.S.</p> <p>No. 40. Current Discussions in Science. By W. M. Williams, F.C.S.</p> <p>No. 41. History of the Science of Politics. By Frederick Pollock.</p> <p>No. 42. Darwin and Humboldt. By Prof. Huxley, Prof. Agassiz, and others.</p> <p>No. 43. The Dawn of History. Part I. By C. F. Keary, of the British Museum.</p> <p>No. 44. The Dawn of History. Part II.</p> |
|--|--|

- No. 46. **The Diseases of Memory.** By Th. Ribot. Translated from the French by J. Fitzgerald, M.A.
- No. 47. **The Childhood of Religion.** By Edward Clodd, F.R.A.S.
- No. 48. **Life in Nature.** (*Illustrated.*) By James Hinton.
- No. 49. **The Sun; its Constitution, its Phenomena, its Condition.** By Judge Nathan T. Carr, Columbus, Ind.
- No. 50. **Money and the Mechanism of Exchange.** Part I. By Prof. W. Stanley Jevons, F.R.S.
- No. 51. **Money and the Mechanism of Exchange.** Part II.
- No. 52. **The Diseases of the Will.** By Th. Ribot. Translated from the French by J. Fitzgerald.
- No. 53. **Animal Automatism, and other Essays,** By Prof. T. H. Huxley, F.R.S.
- No. 54. **The Birth and Growth of Myth.** By Edward Clodd, F.R.A.S.
- No. 55. **The Scientific Basis of Morals, and other Essays.** By William Kingdon Clifford, F.R.S.
- No. 56. **Illusions.** Part I. By James Sully.
- No. 57. **Illusions.** Part II.
- No. 58. **The Origin of Species.** (Double number). Part I. By Charles Darwin.
- No. 59. **The Origin of Species.** Double number. Part II.
- No. 60. **The Childhood of the World.** By Edward Clodd.
- No. 61. **Miscellaneous Essays.** By Richard A. Procter.
- No. 62. **The Religions of the Ancient World,** By Prof. Geo. Rawlinson, Univ. of Oxford, (Double Number).
- No. 63. **Progressive Morality.** By Thomas Fowler, LL.D., President of Corpus Christi Coll., Oxford.
- No. 64. **The Distribution of Animals and Plants.** By A. Russell Wallace and W. T. Thistleton Dyer.
- No. 65. **Conditions of Mental Development; and other essays.** By William Kingdon Clifford.
- No. 66. **Technical Education; and other essays.** By Thomas H. Huxley, F.R.S.
- No. 67. **The Black Death.** An account of the Great Pestilence of the 14th Century. By J. F. C. Hecker, M. D.
- No. 68. **Three Essays.** By Herbert Spencer. Special Number.
- No. 69. **Fetichism: A Contribution to Anthropology and the History of Religion.** By Fritz Schultze, Ph.D. Double number.
- No. 70. **Essays Speculative and Practical.** By Herbert Spencer.
- No. 71. **Anthropology.** By Daniel Wilson, Ph. D. With Appendix on Archæology. By E. B. Tylor, F. R. S.
- No. 72. **The Dancing Mania of the Middle Ages.** By J. F. C. Hecker, M.D.
- No. 73. **Evolution in History, Language and Science.** Four addresses delivered at the London Crystal Palace School of Art, Science and Literature.
- No. 74. } **The Descent of Man, and Selection in**
No. 75. } **Relation to Sex.** (*Numerous Illustrations*)
No. 76. } **By Charles Darwin. Nos. 74, 75, 76 are**
No. 77. } **single Nos.; No. 77. is a double No.**
- No. 78. **Historical Sketch of the Distribution of Land in England.** By William Lloyd Birkbeck, M.A.
- No. 79. **Scientific Aspect of some Familiar Things.** By W. M. Williams.
- No. 80. **Charles Darwin. His Life and Work** By Grant Allen. (Double number).
- No. 81. **The Mystery of Matter, and the Philosophy of Ignorance.** Two Essays by J. Allanson Picton.
- No. 82. **Illusions of the Senses; and other Essays.** By Richard A. Procter.
- No. 83. **Profit-Sharing Between Capital and Labor.** Six Essays. By Sedley Taylor, M.A.
- No. 84. **Studies of Animated Nature.** Four Essays on Natural History. By W. S. Dallas, F.L.S.
- No. 85. **The Essential Nature of Religion.** By J. Allanson Picton.
- No. 86. **The Unseen Universe, and the Philosophy of the Pure Sciences.** By Prof. Wm. Kingdon Clifford, F.R.S.
- No. 87. **The Morphine Habit.** By Dr. B. Ball, of the Paris Faculty of Medicine.
- No. 88. **Science and Crime and other Essays.** By Andrew Wilson, F.R.S.E.
- No. 89. **The Genesis of Science.** By Herbert Spencer.
- No. 90. **Notes on Earthquakes; with Fourteen Miscellaneous Essays.** By Richard A. Procter.
- No. 91. **The Rise of Universities.** By S. S. Laurie, LL.D. (Double number).
- No. 92. **The Formation of Vegetable Mould through the Action of Earth Worms.** By Charles Darwin, LL.D. F.R.S. (Double number).
- No. 93. **Scientific Methods of Capital Punishment.** By J. Mount Bleyer, M.D. (Special number).
- No. 94. **The Factors of Organic Evolution.** By Herbert Spencer.
- No. 95. **The Diseases of Personality.** By Th. Ribot. Translated from the French by J. Fitzgerald, M.A.
- No. 96. **A Half-Century of Science.** By Prof. Thomas H. Huxley, and Grant Allen.
- No. 97. **The Pleasures of Life.** By Sir Jol Lubbock, Bart.
- No. 98. **Cosmic Emotion; Also the Teachings of Science.** By William Kingdon Clifford. (Special number).
- No. 99. **Nature Studies.** By Prof. F. R. Eaton Lowe; Dr. Robert Brown, F.L.S.; Geo. G. Chisholm, F.R.G.S., and James Dallas, F.L.S.

- No. 100. **Science and Poetry, with other Essays.** By Andrew Wilson, F.R.S.E.
- No. 101. **Æsthetics; Dreams and Association of Ideas.** By Jas. Sully and Geo. Croom Robertson.
- No. 102. **Ultimate Finance; A True Theory of Co-operation.** By William Nelson Black.
- No. 103. **The Coming Slavery; The Sins of Legislators; The Great Political Superstition.** By Herbert Spencer.
- No. 104. **Tropical Africa.** By Henry Drummond, F.R.S.
- No. 105. **Freedom in Science and Teaching.** By Ernst Hæckel, of the University of Jena. With a Prefatory Note by Prof. Huxley.
- No. 106. **Force and Energy. A Theory of Dynamics.** By Grant Allen.
- No. 107. **Ultimate Finance. A True Theory of Wealth.** By William Nelson Black.
- No. 108. **English, Past and Present. Part I.** By Richard Chenevix Trench, (Double number).
- No. 109. **English, Past and Present. Part II.** By Richard Chenevix Trench.
- No. 110. **The Story of Creation. A Plain Account of Evolution.** By Edward Clodd. (Double number).
- No. 111. **The Pleasures of Life, Part II.** By Sir John Lubbock, Bart.
- No. 112. **Psychology of Attention.** By Th. Ribot. Translated from the French by J. Fitzgerald, M.A.
- No. 113. **Hypnotism. Its History and Development.** By Fredrik Björnström, M.D., Head Physician of the Stockholm Hospital, Professor of Psychiatry. Late Royal Swedish Medical Councillor. Authorized Translation from the Second Swedish Edition by Baron Nils Posse, M.G., Director of the Boston School of Gymnastics. (Double Number.)
- No. 114. **Christianity and Agnosticism. A Controversy.** Consisting of papers contributed to *The Nineteenth Century* by Henry Wace, D.D., Prof. Thomas H. Huxley, The Bishop of Peterborough, W. H. Mallock, Mrs. Humphry Ward. (Double Number.)
- No. 115. **Darwinism: An Exposition of the Theory of Natural Selection, with some of its applications.** Part I. By Alfred Russel Wallace, LL.D., F.L.S., etc. Illustrated. (Double Number.)
- No. 116. **Darwinism: An Exposition of the Theory of Natural Selection, with some of its Applications.** Part II. Illustrated. (Double Number.)
- No. 117. **Modern Science and Mod. Thought.** By S. Laing. Illustrated. (Double Number.)
- No. 118. **Modern Science and Mod. Thought.** Part II. By S. Laing.
- No. 119. **The Electric Light and The Storing of Electrical Energy.** (Illustrated) Gerald Molloy, D.D., D.Sc.
- No. 120. **The Modern Theory of Heat and The Sun as a Storehouse of energy.** (Illustrated.) Gerald Molloy, D.D., D.Sc.
- No. 121. **Utilitarianism.** By John Stuart Mill.
- No. 122. **Upon the Origin of Alpine and Italian Lakes and upon Glacial Erosion.** Maps and Illustrations. By Ramsey, Ball, Murchison, Studer, Favre, Whymper and Spencer. Part I. (Double Number.)
- No. 123. **Upon the Origin of Alpine and Italian Lakes, Etc., Etc.** Part II.
- No. 124. **The Quintessence of Socialism.** By Prof. A. Schaffle.
- No. 125. **Darwinism & Politics.** By David G. Ritchie, M.A.
- No. 125. **Administrative Nihilism.** By Thomas Huxley, F.R.S.
- No. 126. **Physiognomy & Expression.** By P. Mantegazza. Illustrated. Part I. (Double Number.)
- No. 127. **Physiognomy & Expression.** Part II. (Double Number.)
- No. 128. **The Industrial Revolution.** By Arnold Toynbee, Tutor of Balliol College, Oxford. With a short memoir by B. Jowett. Part I. (Double Number.)
- No. 129. **The Industrial Revolution.** Part II. (Double Number.)
- No. 130. **The Origin of the Aryans.** By Dr. Isaac Taylor. Illustrated. Part I. (Double Number.)
- No. 131. **The Origin of the Aryans.** Part II. (Double Number.)
- No. 132. **The Evolution of Sex.** By Prof. P. Geddes and J. Arthur Thomson. Illustrated. Part I. (Double Number.)
- No. 133. **The Evolution of Sex.** Part II. (Double Number.)
- No. 134. **The Law of Private Right.** By George H. Smith. (Double Number.)
- No. 135. **Capital. A Critical Analysis of Capitalist Production.** By Karl Marx. Part I. (Double Number.)
- No. 136. **Capital.** Part II. (Double Number.)
- No. 137. **Capital.** Part III. (Double Number.)
- No. 138. **Capital.** Part IV. (Double Number.)
- No. 139. **Lightning, Thunder and Lightning Conductors.** (Illustrated.) By Gerald Molloy, D.D., D.Sc.
- No. 140. **What is Music?** With an appendix on How the Geometrical Lines have their Counterparts in Music. By Isaac L. Rice.
- No. 141. **Are the Effects of Use and Disuse Inherited?** By William Platt Ball.
- No. 142. **A Vindication of the Rights of Woman.** By Mary Wollstonecraft. With an Introduction by Mrs. Henry Fawcett. Part I. (Double Number.)
- No. 143. **A Vindication of the Rights of Woman.** Part II. (Double Number.)
- No. 144. **Civilization: Its Cause and Cure.** By Edward Carpenter.
- No. 145. **Body and Mind.** By William Kingdon Clifford.
- No. 146. **Social Diseases and Worse Remedies.** By Thos. H. Huxley, F. R. S.
- No. 147. **The Soul of Man under Socialism.** By Oscar Wilde.
- No. 148. **Electricity, the Science of the Nineteenth Century.** By E. O. Gilliard. (Illus.) Part I. Double number.
- No. 149. **The same.** Part II.

No. 150.	Degeneration: A Chapter in Darwinism. (Illustrated.) By E. Ray Lankester, M.A., LL.D., F.R.S.	No. 153.}	Mental Suggestion.	Part II.
		No. 154.}	(Double Number.)	
No. 151.}	Mental Suggestion. By Dr. J. Ochorowicz. Part I. (Double Number.)	No. 155.}	Mental Suggestion.	Part III.
No. 152.}		No. 156.}	(Double Number.)	
		No. 157.}	Mental Suggestion.	Part IV.
		No. 158.}	(Double Number.)	

COMPLETE SETS OF THE HUMBOLDT LIBRARY

CAN BE OBTAINED UNIFORM IN SIZE.

STYLE OF BINDING. Etc.

The Volumes average over 600 pages each, and are arranged thus :

Volume	I.	Contains	Numbers,	.....	1-12
"	II.	"	"	.....	13-24
"	III.	"	"	.....	25-36
"	IV.	"	"	.....	37-48
"	V.	"	"	.....	49-59
"	VI.	"	"	.....	60-70
"	VII.	"	"	.....	71-80
"	VIII.	"	"	.....	81-91
"	IX.	"	"	.....	92-103
"	X.	"	"	.....	104-111
"	XI.	"	"	.....	112-118
"	XII.	"	"	.....	119-127
"	XIII.	"	"	.....	128-133
"	XIV.	"	"	.....	134-139
"	XV.	"	"	.....	140-147
"	XVI.	"	"	.....	148-158

CLOTH, EXTRA, \$2.00 PER VOLUME.

LATEST CLOTH BOOKS.

ELECTRICITY: THE SCIENCE OF THE NINETEENTH CENTURY. A Sketch for General Readers. By E. M. CAILLARD. Illustrated. Cloth, extra, .75

MENTAL SUGGESTION. By Dr. J. OCHOROWICZ, Professor in the University of Jemberg. Cloth, extra, \$2 00.

THE HUMBOLDT LIBRARY SERIES

BOUND IN CLOTH, EXTRA.

Best and Cheapest Editions Published.

- THE NATURALIST ON THE RIVER AMAZON.** A Record of Adventures, Habits of Animals, Sketches of Brazilian and Indian Life and Aspects of Nature under the Equator—during Eleven Years of Travel, by Henry Walter Bates, F.L.S., Assistant Secretary to the Royal Geographical Society of England. Cloth. .75
- THE RISE AND EARLY CONSTITUTION OF UNIVERSITIES,** with a survey of Mediæval Education. By S. S. Laurie, LL.D., Professor of the Institutes and History of Education in the University of Edinburgh, Cloth. .75
- THE RELIGIONS OF THE ANCIENT WORLD,** including Egypt, Assyria and Babylonia, Persia, India, Phœnicia, Etruria, Greece, Rome. By George Rawlinson, M.A., Camden Professor of Ancient History, Oxford, and Canon of Canterbury, author of "The Origin of Nations," "The Five Great Monarchies," etc. Cloth. .75
- FETICHISM :** A Contribution to Anthropology and the History of Religion. By Fritz Schultze. Translated from the German by J. Fitzgerald, M.A. Cloth. .75
- MONEY AND THE MECHANISM OF EXCHANGE,** by W. Stanley Jevons, M.A., F.R.S., Professor of Logic and Political Economy in the Owens College, Manchester. Cloth. .75
- ON THE STUDY OF WORDS.** By Richard Chenevix Trench, D.D., Archbishop of Dublin. Cloth. .75
- THE DAWN OF HISTORY :** An Introduction to Pre-Historic Study, edited by C. F. Keary, M.A., of the British Museum. Cloth. .75
- GEOLOGICAL SKETCHES AT HOME AND ABROAD.** By Archibald Geikie, LL.D., F.R.S., Director-General of the Geological Surveys of Great Britain and Ireland. Cloth. .75
- ILLUSIONS :** A Psychological Study. By James Sully, author of "Sensation and Intuition," "Pessimism," etc. Cloth. .75
- THE PLEASURES OF LIFE.** (Part I. and Part II.) By Sir John Lubbock, Bart. Two parts in one. .75
- ENGLISH PAST AND PRESENT.** (Part I. and Part II.) By Richard Chenevix Trench. Two Parts in One, Complete, .75
- THE STORY OF CREATION,** A Plain Account of Evolution, By Edward Clodd, F.R.A.S. With over 80 Illustrations. .75
- HYPNOTISM.** Its History and Development. By Fredrik Björnström, M. D., Head Physician of the Stockholm Hospital, Professor of Psychiatry, Late Royal Swedish Medical Councillor. Authorized translation from the Second Swedish Edition by Baron Nils Posse, M. G., Director of the Boston School of Gymnastics. Cloth, extra, .75
- CHRISTIANITY AND AGNOSTICISM.**—A controversy consisting of papers by Henry Wace, D.D., Prebendary of St. Paul's Cathedral; Principal of King's College, London.—Professor Thomas H. Huxley.—W. C. Magee, D.D., Bishop of Peterborough.—W. H. Mallock, Mrs. Humphry Ward. Cloth. .75
- DARWINISM: AN EXPOSITION OF THE THEORY OF NATURAL SELECTION,** with some of its applications.—By Alfred Russel Wallace, LL.D., F.L.S. With map and illustrations. Cloth. \$1.25
- MODERN SCIENCE AND MODERN THOUGHT.**—By S. Laing. Illustrated. Cloth. Extra. .75

WORKS BY CHARLES DARWIN.

- ORIGIN OF SPECIES BY MEANS OF NATURAL SELECTION**, or the Preservation of Favored Races in the Struggle for Life. New edition, from the latest English edition, with additions and corrections
Cloth. 1.25
- DESCENT OF MAN**, and Selection in Relation to Sex. With illustrations.
New edition, revised and augmented. Cloth. 1.50
- FORMATION OF VEGETABLE MOULD THROUGH THE ACTION OF WORMS**, with Observations on their Habits. With illustrations. Cloth.75
-
- CHARLES DARWIN** : His Life and Work, by Grant Allen. Cloth. .75

SELECT WORKS OF GRANT ALLEN, CONTAINING :

- THE EVOLUTIONIST AT LARGE**,
VIGNETTES FROM NATURE, and
FORCE AND ENERGY, A Theory of Dynamics.
Three books in one vol. Cloth. 1.00

WATER, ELECTRICITY AND LIGHT, BY PROFESSOR JOHN
TYNDALL, CONTAINING :

- FORMS OF WATER IN CLOUDS AND RIVERS**, Ice and Glaciers. 19 illustrations.
- LESSONS IN ELECTRICITY**. 60 Illustrations
- SIX LECTURES ON LIGHT**. Illustrated.
Three books in 1 vol. Cloth. 1.00

WORKS BY HERBERT SPENCER.

- THE DATA OF ETHICS**. Cloth.75
- EDUCATION**, Intellectual, Moral and Physical.
- PROGRESS** : Its Law and Cause. With other disquisitions.
Two books in one vol. Cloth.75
- THE GENESIS OF SCIENCE**.
- THE FACTORS OF ORGANIC EVOLUTION**.
Two books in one vol. Cloth.75
- SELECT WORKS OF RICHARD A. PROCTOR, F.R.A.S.:

- LIGHT SCIENCE FOR LEISURE HOURS**.
- FAMILIAR ESSAYS ON SCIENTIFIC SUBJECTS**.
- HEREDITARY TRAITS**, and other Essays.
- MISCELLANEOUS ESSAYS**.
- ILLUSIONS OF THE SENSES**, and other Essays.
- NOTES ON EARTHQUAKES**, with fourteen miscellaneous Essays.
Six books in one vol. 1.50

SELECT WORKS OF WILLIAM KINGDON CLIFFORD, F.R.A.S.,
CONTAINING :

- SEEING AND THINKING**.
- THE SCIENTIFIC BASIS OF MORALS**, and other Essays.
- CONDITIONS OF MENTAL DEVELOPMENT**, and other Essays.
- THE UNSEEN UNIVERSE**, and the Philosophy of the Pure Sciences.
- COSMIC EMOTION : ALSO THE TEACHINGS OF SCIENCE**.
Five books in one vol. Cloth. 1.25

SELECT WORKS OF EDWARD CLODD, F.R.A.S., CONTAINING :

THE CHILDHOOD OF RELIGION.

THE BIRTH AND GROWTH OF MYTH, and

THE CHILDHOOD OF THE WORLD.

Three books in 1 vol. Cloth. 1.00

SELECT WORKS OF TH. RIBOT, TRANSLATED FROM THE FRENCH

BY J. FITZGERALD, M.A., CONTAINING :

THE DISEASES OF MEMORY.

THE DISEASES OF THE WILL, and

THE DISEASES OF PERSONALITY,

Three books in one vol. Cloth. 1.00

THE MILKY WAY, CONTAINING :

THE WONDERS OF THE HEAVENS, (Thirty-two Illustrations). By
Camille Flammarion.

THE ROMANCE OF ASTRONOMY. By R. Kalley Miller, M.A.

THE SUN; its Constitution, its Phenomena, its Condition. By Nathan T.
Carr, LL.D.

Three books in one vol. 1.00

POLITICAL SCIENCE, CONTAINING :

PHYSICS AND POLITICS. An application of the principles of Natural
Science to Political Society. By Walter Bagehot, author of "The English
Constitution."

HISTORY OF THE SCIENCE OF POLITICS. By Frederick
Pollock.

Two books in one vol. 75

THE LAND QUESTION, CONTAINING :

THE HISTORY OF LANDHOLDING IN ENGLAND. By
Joseph Fisher, F.R.H.S., and

HISTORICAL SKETCH OF THE DISTRIBUTION OF LAND
IN ENGLAND. By William Lloyd Birbeck, M.A.

Two books in one vol. 75

THE MYSTERY OF MATTER, and THE PHILOSOPHY OF IGNOR-
ANCE.

THE ESSENTIAL NATURE OF RELIGION, By J. Allanson
Picton. Two books in one vol. Cloth. 75

SCIENCE AND CRIME, and

SCIENCE AND POETRY, with other Essays. By Andrew Wilson,
F.R.S.E. Two books in one vol. Cloth. 75

CURRENT DISCUSSIONS IN SCIENCE, and

SCIENTIFIC ASPECT OF SOME FAMILIAR THINGS. By
W. M. Williams, F.C.S.

Two books in one vol. Cloth. 75

THE BLACK DEATH, an Account of the Great Pestilence of the Four-
teenth Century, and

THE DANCING MANIA OF THE MIDDLE AGES. By J. F. C.
Hecker, M.D.

Two books in one vol. Cloth. 75

WORKS BY PROFESSOR HUXLEY.

MAN'S PLACE IN NATURE (with numerous illustrations).

THE ORIGIN OF SPECIES.

Two books in one vol. Cloth.

.75

THE PHYSICAL BASIS OF LIFE, with other Essays.

LECTURES ON EVOLUTION, illustrated. By Prof. T. H. Huxley.

Two books in one vol. Cloth.

.75

ANIMAL AUTOMATISM, and other Essays.

TECHNICAL EDUCATION, and other Essays.

Two books in one vol. Cloth.

.75

NEW BOOKS.

UPON THE ORIGIN OF ALPINE AND ITALIAN LAKES; AND UPON GLACIAL EROSION. A series of papers by Sir A. C. RAMSAY, F.R.S., President of the Geological Society. JOHN BALL, M.R.I.A., F.L.S., &c. Sir RODERICK MURCHISON, F.R.S., D.C.L., President of the Royal Geographical Society. Prof. A. STUDER, of Berne. Prof. A. FAVRE, of Geneva. EDWARD WHYMPER. With an Introduction, and Notes upon the Origin and History of the great lakes of North America, by Prof. J. W. SPENCER, State Geologist of Georgia. Maps and Illustrations. Cloth, 75 cts.

PHYSIOGNOMY AND EXPRESSION. By PAOLO MANTEGAZZA, Senator; Director of the National Museum of Anthropology, Florence; President of the Italian Society of Anthropology. Illustrated. Cloth, \$1.00.

THE INDUSTRIAL REVOLUTION OF THE 18th CENTURY IN ENGLAND. Popular Addresses, Notes and Other Fragments, by the late ARNOLD TOYNBEE, Tutor of Balliol College, Oxford, together with a short memoir by B. JOWETT, Master of Balliol College, Oxford. Cloth, \$1.00.

THE ORIGIN OF THE ARYANS. An account of the Prehistoric Ethnology and Civilization of Europe. By ISAAC TAYLOR, M. A., Litt. D., Hon. LL.D. Illustrated. Cloth, \$1.00.

THE EVOLUTION OF SEX. By Professor PATRICK GEDDES and J. ARTHUR THOMSON. Numerous Illustrations. Cloth, \$1.00.

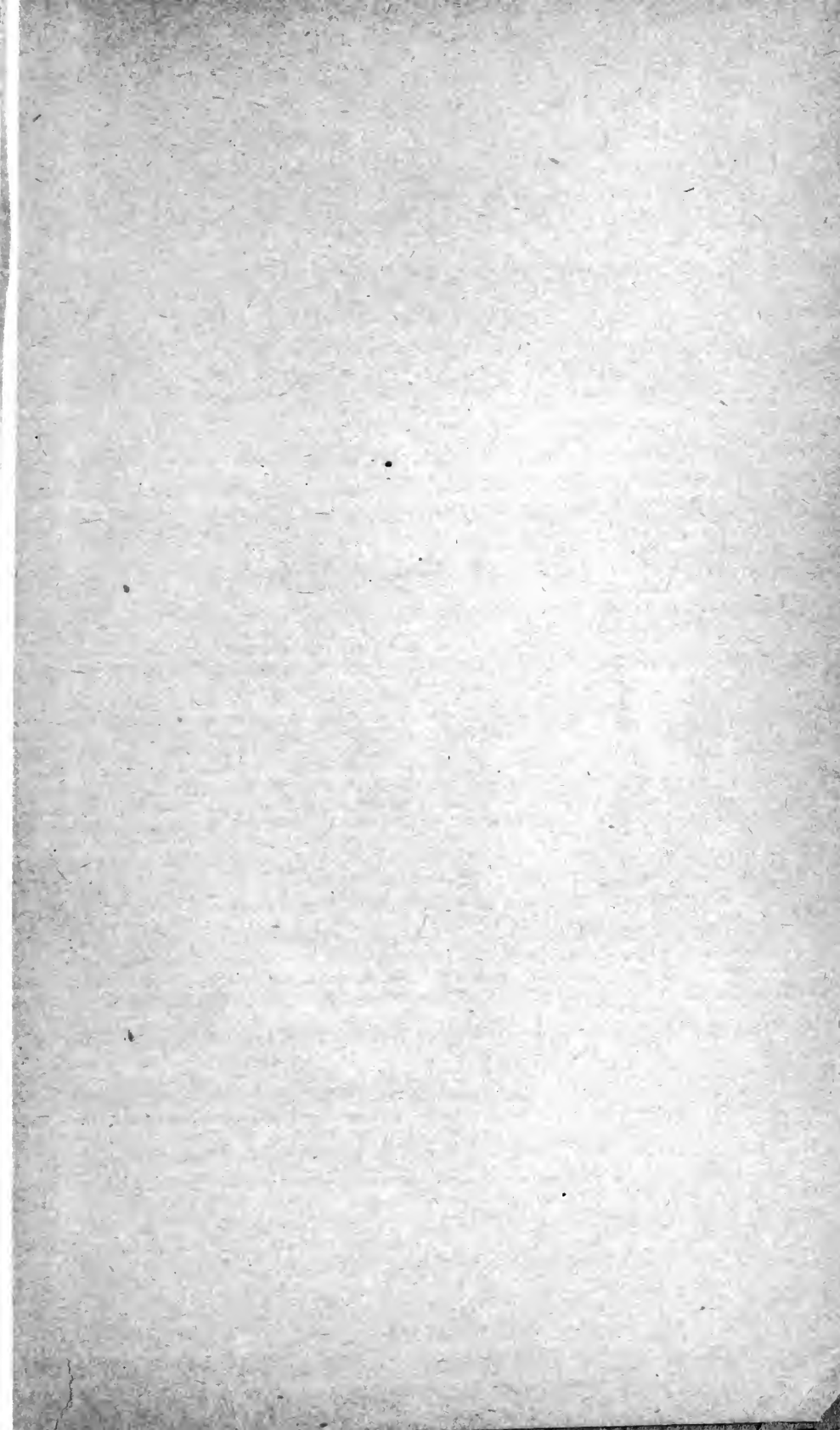
THE LAW OF PRIVATE RIGHT. By GEORGE H. SMITH, Author of "ELEMENTS OF RIGHT AND THE LAW," and of Essays on "THE CERTAINTY OF THE LAW AND THE UNCERTAINTY OF JUDICIAL DECISIONS," "THE TRUE METHOD OF LEGAL EDUCATION," and other subjects. Cloth, .75

CAPITAL: A CRITICAL ANALYSIS OF CAPITALIST PRODUCTION. By KARL MARX, Translated from the third German edition by SAMUEL MOORE and EDWARD AVELING, and edited by FREDERICK ENGELS.—*The only American Edition.—Carefully Revised.* Cloth, \$1.75;

"The great merit of Marx, therefore, lies in the work he has done as a scientific inquirer into the economic movement of modern times, as the Philosophic historian of the capitalistic era." *Encyclopædia Britannica.*

"So great a position has not been won by any work on Economic Science since the appearance of *The Wealth of Nations*. . . . All these circumstances invest, therefore, the teachings of this particularly acute thinker with an interest such as can not be claimed by any other thinker of the present day."—*The Athenæum.*

A VINDICATION OF THE RIGHTS OF WOMEN with Strictures on Political and Moral Subjects. By MARY WOLLSTONECRAFT. New Edition with an introduction by Mrs. HENRY FAWCETT. Cloth. \$1 00



A Remarkable Book.—Edward Bellamy.

THE
KINGDOM OF THE UNSELFIS
OR,
EMPIRE OF THE WISE.

By JOHN LORD PECK.

Cloth, 12mo.....\$1.00.

"Should be re-read by every seeker after truth."—*Rockland Independent.*

"Polished in style and very often exquisite in expression."—*Natick Citizen.*

"The book is interesting throughout, and the more widely it is read the better."—*Century.*

"Shows profound research, original ideas, and what be almost called inspiration."—*Day Times (Tacoma).*

"The effort is noble, and the author has not escaped saying many profound and things."—*Christian Union.*

"One of a large number of 'reformatory' volumes now being printed, but it is better many of them."—*Truth Seeker.*

"The book is from a widely-read man, and is written for a high end. In its intent and 'spiritual' aspects, it is educative and stimulating."—*The New Ideal.*

"The book before us is one of the signs of the times. It prophesies a new age and exhorts to the life which shall further its coming."—*New Church Messenger.*

"The book is a natural product of the prophetic element of the times, which is reformed forward into the new economic age we are just entering."—*Teacher's Outlook.*

"The chapters on 'Natural and Social Selection' are among the most interesting book, and require close reading to take in the whole drift of their meaning."—*Tribune.*

"It is a real contribution to original and advanced thought upon the highest of life and religion—of intellectual, moral, social, material and spiritual progress."—*Unitarian.*

"There are many golden sentences in the chapter on Love, and the practical good shown in the treatment of the marriage question would help many husbands and wives live more happily together."—*The Dawn.*

"This is a new and thoroughly original treatment of the subjects of morality, religion, human perfectibility, and furnishes a new ground for the treatment of all social questions. It is radical and unique."—*The Northwestern.*

"It is in no sense an ordinary work. It makes strong claims and attempts to carry the largest purposes. Taking the stand-point of science, it attacks the gravest problems of the times with an endeavor to show that the most advanced science will enable us to reach the most satisfactory conclusions."—*Chicago Inter Ocean.*

"One of the most important recent works for those who are striving to rise into a life, who are struggling to escape the thralldom of the present selfish and pessimistic world. Many passages in Mr. Peck's work strongly suggest the lofty teachings of those noble ancient philosophers, the Stoics. Those who are hungering and thirsting after a better existence will find much inspiration in 'The Kingdom of the Unselfish.'"—*The Arena.*

THE HUMBOLDT PUBLISHING CO.

S

C2953m

Carpenter, Edward

395114

Modern science and the science of the
future.

**University of Toronto
Library**

**DO NOT
REMOVE
THE
CARD
FROM
THIS
POCKET**

Acme Library Card Pocket
LOWE-MARTIN CO. LIMITED

