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# ESSAYS:

SCIENTIFIC, POLITICAL, AND SPECULATIVE.

(SECOND SERIES.)

BY

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"SOCIAL STATICS," "FIRST PRINCIPLES," "THE PRINCIPLES OF PSYCHOLOGY,"  
"EDUCATION," ETC.

REPRINTED,

CHIEFLY FROM THE QUARTERLY REVIEWS.

NEW YORK:

D. APPLETON & CO., 443 & 445 BROADWAY.

1864.



HERTFORD  
PRINTED BY STEPHEN AUSTIN, FORE STREET.



## PREFACE.

LIKE those contained in the first series, issued in 1858, the Essays here collected together, were mostly written with a view to ultimate re-publication. Nearly all of them have relations, more or less direct, to the general doctrine of Evolution: such of them as do not manifestly deal with one or other of its aspects, being still pervaded by tacit references to it.

Thus having for their end, to develop certain views of permanent interest, these Essays originally had bestowed on them, more labour than review-articles usually receive; and to prepare them for re-publication, they have now been carefully revised. To some, additions have been made; from others, superfluous passages have been omitted; and throughout, much trouble has been taken to remove faults of expression.

There are three Essays which I have thought it best not to include in this series. One on "A Theory of Population deduced from the General Law of Animal Fertility," published in the *Westminster Review*, for April, 1852, and one on "The Laws of Organic Form," published in the *Medico-Chirurgical Review*, for October, 1859, I hope shortly to embody, in a much-developed form, in the second volume of the "Principles of Biology." And the third—a criticism

on Prof. Owen's "Archetype and Homologies of the Vertebrate Skeleton," published in the *Medico-Chirurgical Review*, for January, 1860—is of too technical a character for the general reader.

The following are the names of the Periodicals in which, and the dates at which, these Essays originally appeared :—

"The Nebular Hypothesis," in the *Westminster Review*, for July, 1858.

"Illogical Geology," in the *Universal Review*, for July, 1859.

"The Physiology of Laughter," in *Macmillan's Magazine*, for March, 1860.

"Bain on the Emotions and the Will," in the *Medico-Chirurgical Review*, for January, 1860.

"The Social Organism," in the *Westminster Review*, for January, 1860.

"Representative Government—what is it good for?" in the *Westminster Review*, for October, 1857.

"Parliamentary Reform: the Dangers, and the Safeguards," in the *Westminster Review*, for April, 1860.

"Prison-Ethics," in the *British Quarterly Review*, for July, 1860.

"State-Tamperings with Money and Banks," in the *Westminster Review*, for January, 1858.

"The Morals of Trade," in the *Westminster Review*, for April, 1859.

I have here, as before, to tender my thanks to the proprietors of these periodicals, for their courtesy in consenting to this re-publication.

London,

November, 1863.

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# ESSAYS.

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## THE NEBULAR HYPOTHESIS.

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INQUIRING into the pedigree of an idea is not a bad means of roughly estimating its value. To have come of respectable ancestry, is *primâ facie* evidence of worth in a belief as in a person; while to be descended from a discreditable stock is, in the one case as in the other, an unfavorable index. The analogy is not a mere fancy. Beliefs, together with those who hold them, are modified little by little in successive generations; and as the modifications which successive generations of the holders undergo, do not destroy the original type, but only disguise and refine it, so the accompanying alterations of belief, however much they purify, leave behind the essence of the original belief.

Considered genealogically, the received theory respecting the creation of the Solar System is unmistakeably of low origin. You may clearly trace it back to primitive mythologies. Its remotest ancestor is the doctrine that the celestial bodies are personages who originally lived on the Earth—a doctrine still held by some of the negroes Livingstone visited. Science having divested the sun and planets of their divine personalities, this old idea was succeeded by the idea which even Kepler entertained, that the planets are guided in their courses by presiding spirits: no longer themselves gods, they

are still severally kept in their orbits by gods. And when gravitation came to dispense with these celestial steersmen, there was begotten a belief, less gross than its parent, but partaking of the same essential nature, that the planets were originally launched into their orbits from the Creator's hand. Evidently, though much refined, the anthropomorphism of the current hypothesis is inherited from the aboriginal anthropomorphism, which described gods as a stronger order of men.

There is an antagonist hypothesis which does not propose to honour the Unknown Power manifested in the Universe, by such titles as "The Master-Builder," or "The Great Artificer;" but which regards this Unknown Power as probably working after a method quite different from that of human mechanics. And the genealogy of this hypothesis is as high as that of the other is low. It is begotten by that ever-enlarging and ever-strengthening belief in the presence of Law, which accumulated experiences have gradually produced in the human mind. From generation to generation Science has been proving uniformities of relation among phenomena which were before thought either fortuitous or supernatural in their origin—has been showing an established order and a constant causation where ignorance had assumed irregularity and arbitrariness. Each further discovery of Law has increased the presumption that Law is everywhere conformed to. And hence, among other beliefs, has arisen the belief that the Solar System originated, not by *manufacture* but by *evolution*. Besides its abstract parentage in those grand general conceptions which positive Science has generated, this hypothesis has a concrete parentage of the highest character. Based as it is on the law of universal gravitation, it may claim for its remote progenitor the great thinker who established that law. The man who gave it its general shape, by promulgating the doctrine that stars result from the aggregation of diffused matter, was the most diligent, careful, and original astronomical observer of modern times.

And the world has not seen a more learned mathematician than the man who, setting out with this conception of diffused matter concentrating towards its centre of gravity, pointed out the way in which there would arise, in the course of its concentration, a balanced group of sun, planets, and satellites, like that of which the Earth is a member.

Thus, even were there but little direct evidence assignable for the Nebular Hypothesis, the probability of its truth would still be strong. Its own high derivation and the low derivation of the antagonist hypothesis, would together form a weighty reason for accepting it—at any rate, provisionally. But the direct evidence assignable for the Nebular Hypothesis is by no means little. It is far greater in quantity, and more varied in kind, than is commonly supposed. Much has been said here and there on this or that class of evidences; but nowhere, as far as we know, have all the evidences, even of one class, been fully stated; and still less has there been an adequate statement of the several groups of evidences in their *ensemble*. We propose here to do something towards supplying the deficiency: believing that, joined with the *à priori* reasons given above, the array of *à posteriori* reasons will leave little doubt in the mind of any candid inquirer.

And first, let us address ourselves to those recent discoveries in stellar astronomy, which have been supposed to conflict with this celebrated speculation.

When Sir William Herschel, directing his great reflector to various nebulous spots, found them resolvable into clusters of stars, he inferred, and for a time maintained, that all nebulous spots are clusters of stars exceedingly remote from us. But after years of conscientious investigation, he concluded that “there were nebulosities which are not of a starry nature;” and on this conclusion was based his hypothesis of a diffused luminous fluid, which, by its eventual aggregation, produced stars. A telescopic power much exceeding that used by Herschel, has enabled Lord Rosse to

resolve some of the nebulae previously unresolved ; and, returning to the conclusion which Herschel first formed on similar grounds but afterwards rejected, many astronomers have assumed that, under sufficiently high powers, every nebula would be decomposed into stars—that the resolvability is solely a question of distance. The hypothesis now commonly entertained is, that all nebulae are galaxies more or less like in nature to that immediately surrounding us ; but that they are so inconceivably remote, as to look, through an ordinary telescope, like small faint spots. And not a few have drawn the corollary, that by the discoveries of Lord Rosse the Nebular Hypothesis has been disproved.

Now, even supposing that these inferences respecting the distances and natures of the nebulae are valid, they leave the Nebular Hypothesis substantially as it was. Admitting that each of these faint spots is a sidereal system, so far removed that its countless stars give less light than one small star of our own sidereal system ; the admission is in no way inconsistent with the belief, that stars and their attendant planets have been formed by the aggregation of nebulous matter. Though, doubtless, if the existence of nebulous matter now in course of concentration be disproved, one of the evidences of the Nebular Hypothesis is destroyed ; yet the remaining evidences remain just as they were. It is a perfectly tenable position, that though nebular condensation is now nowhere to be seen in progress, yet it was once going on universally. And, indeed, it might be argued that the still-continued existence of diffused nebulous matter is scarcely to be expected ; seeing that the causes which have resulted in the aggregation of one mass, must have been acting on all masses, and that hence the existence of masses not aggregated would be a fact calling for explanation. Thus, granting the immediate conclusions suggested by these recent disclosures of the six-foot reflector, the corollary which many have drawn is inadmissible.

But we do not grant these conclusions. Receiving them



though we have, for years past, as established truths, a critical examination of the facts has convinced us that they are quite unwarrantable. They involve so many manifest incongruities, that we have been astonished to find men of science entertaining them even as probable hypotheses. Let us consider these incongruities.

In the first place, mark what is inferable from the distribution of nebulae.

“The spaces which precede or which follow simple nebulae,” says Arago, “and, *à fortiori*, groups of nebulae, contain generally few stars. Herschel found this rule to be invariable. Thus, every time that, during a short interval, no star approached, in virtue of the diurnal motion, to place itself in the field of his motionless telescope, he was accustomed to say to the secretary who assisted him, ‘Prepare to write; nebulae are about to arrive.’”

How does this fact consist with the hypothesis that nebulae are remote galaxies? If there were but one nebula, it would be a curious coincidence were this one nebula so placed in the distant regions of space, as to agree in direction with a starless spot in our own sidereal system. If there were but two nebulae, and both were so placed, the coincidence would be excessively strange. What, then, shall we say on finding that there are thousands of nebulae so placed? Shall we believe that in thousands of cases these far-removed galaxies happen to agree in their visible positions with the thin places in our own galaxy? Such a belief is next to impossible. Still more manifest does the impossibility of it become when we consider the general distribution of nebulae. Besides again showing itself in the fact that “the poorest regions in stars are near the richest in nebulae,” the law above specified applies to the heavens as a whole. In that zone of celestial space where stars are excessively abundant, nebulae are rare; while in the two opposite celestial spaces that are furthest removed from this zone, nebulae are abundant. Scarcely any nebulae lie near the galactic circle (or plane of the Milky Way); and the great mass of them lie round the galactic

poles. Can this also be mere coincidence? When to the fact that the general mass of nebulae are antithetical in position to the general mass of stars, we add the fact that local regions of nebulae are regions where stars are scarce, and the further fact that single nebulae are habitually found in comparatively starless spots; does not the proof of a physical connexion become overwhelming? Should it not require an infinity of evidence to show that nebulae are not parts of our sidereal system? Let us see whether any such infinity of evidence is assignable. Let us see whether there is even a single alleged proof which will bear examination.

“As seen through colossal telescopes,” says Humboldt, “the contemplation of these nebulous masses leads us into regions from whence a ray of light, according to an assumption not wholly improbable, requires millions of years to reach our earth—to distances for whose measurement the dimensions (the distance of Sirius, or the calculated distances of the binary stars in Cygnus and the Centaur) of our nearest stratum of fixed stars scarcely suffice.”

Now, in this somewhat confused sentence there is expressed a more or less decided belief, that the distances of the nebulae from our galaxy of stars as much transcend the distances of our stars from each other, as these interstellar distances transcend the dimensions of our planetary system. Just as the diameter of the Earth's orbit, is an inappreciable point when compared with the distance of our Sun from Sirius; so is the distance of our Sun from Sirius, an inappreciable point when compared with the distance of our galaxy from those far-removed galaxies constituting nebulae. Observe the consequences of this assumption.

If one of these supposed galaxies is so remote that its distance dwarfs our interstellar spaces into points, and therefore makes the dimensions of our whole sidereal system relatively insignificant; does it not inevitably follow that the telescopic power required to resolve this remote galaxy into stars, must be incomparably greater than the telescopic power required to resolve the whole of our own galaxy into stars? Is it not

certain that an instrument which can just exhibit with clearness the most distant stars of our own cluster, must be utterly unable to separate one of these remote clusters into stars? What, then, are we to think when we find that the same instrument which decomposes hosts of nebulae into stars, *fails* to resolve completely our own Milky Way? Take a homely comparison. Suppose a man surrounded by a swarm of bees, extending, as they sometimes do, so high in the air as to be individually almost invisible, were to declare that a certain spot on the horizon was a swarm of bees; and that he knew it because he could see the bees as separate specks. Astounding as the assertion would be, it would not exceed in incredibility this which we are criticising. Reduce the dimensions to figures, and the absurdity becomes still more palpable. In round numbers, the distance of Sirius from the Earth is a million times the distance of the Earth from the Sun; and, according to the hypothesis, the distance of a nebula is something like a million times the distance of Sirius. Now, our own "starry island, or nebula," as Humboldt calls it, "forms a lens-shaped, flattened, and everywhere detached stratum, whose major axis is estimated at seven or eight hundred, and its minor axis at a hundred and fifty times the distance of Sirius from the Earth."<sup>1</sup> And since it is concluded that our Solar System is near the centre of this aggregation, it follows that our distance from the remotest parts of it is about four hundred distances of Sirius. But the stars forming these remotest parts are not individually visible, even through telescopes of the highest power. How, then, can such telescopes make individually visible the stars of a nebula which is a million times the distance of Sirius? The implication is, that a star rendered invisible by distance becomes visible if taken two thousand five hundred times further off! Shall we accept this implication? or shall we not rather conclude that the nebulae are *not* remote galaxies? Shall we not infer

<sup>1</sup> Cosmos. (Seventh Edition.) Vol. i. pp. 79, 80.

that, be their nature what it may, they must be at least as near to us as the extremities of our own sidereal system ?

Throughout the above argument, it is tacitly assumed that differences of apparent magnitude among the stars, result mainly from differences of distance. On this assumption the current doctrines respecting the nebulae are founded ; and this assumption is, for the nonce, admitted in each of the foregoing criticisms. From the time, however, when it was first made by Sir W. Herschel, this assumption has been purely gratuitous ; and it now proves to be totally inadmissible. But, awkwardly enough, its truth and its untruth are alike fatal to the conclusions of those who argue after the manner of Humboldt. Note the alternatives.

On the one hand, what follows from the untruth of the assumption ? If apparent largeness of stars is not due to comparative nearness, and their successively smaller sizes to their greater and greater degrees of remoteness, what becomes of the inferences respecting the dimensions of our sidereal system and the distances of nebulae ? If, as has lately been shown, the almost invisible star 61 Cygni has a greater parallax than  $\alpha$  Cygni, though, according to an estimate based on Sir W. Herschel's assumption, it should be about twelve times more distant—if, as it turns out, there exist telescopic stars which are nearer to us than Sirius ; of what worth is the conclusion that the nebulae are very remote, because their component luminous masses are made visible only by high telescopic powers ? Clearly, if the most brilliant star in the heavens and a star that cannot be seen by the naked eye, prove to be equidistant, relative distances cannot be in the least inferred from relative visibilities. And if so, nebulae may be comparatively near, though the starlets of which they are made up appear extremely minute.

On the other hand, what follows if the truth of the assumption be granted ? The arguments used to justify this assumption in the case of the stars, equally justify it in the case of the nebulae. It cannot be contended that, on the

average, the *apparent* sizes of the stars indicate their distances, without its being admitted that, on the average, the *apparent* sizes of the nebulae indicate their distances—that, generally speaking, the larger are the nearer, and the smaller are the more distant. Mark, now, the necessary inference respecting their resolvability. The largest or nearest nebulae will be most easily resolved into stars; the successively smaller will be successively more difficult of resolution; and the irresolvable ones will be the smallest ones. This, however, is exactly the reverse of the fact. The largest nebulae are either wholly irresolvable, or but partially resolvable under the highest telescopic powers; while a great proportion of quite small nebulae, are easily resolved by far less powerful telescopes. An instrument through which the great nebula in Andromeda, two and a half degrees long and one degree broad, appears merely as a diffused light, decomposes a nebula of fifteen minutes diameter into twenty thousand starry points. At the same time that the individual stars of a nebula eight minutes in diameter are so clearly seen as to allow of their number being estimated, a nebula covering an area five hundred times as great shows no stars at all. What possible explanation can be given of this on the current hypothesis?

Yet a further difficulty remains—one which is, perhaps, still more obviously fatal than the foregoing. This difficulty is presented by the phenomena of the Magellanic clouds. Describing the larger of these, Sir John Herschel says:—

“The nubecula major, like the minor, consists partly of large tracts and ill-defined patches of irresolvable nebula, and of nebulosity in every stage of resolution, up to perfectly resolved stars like the Milky Way; as also of regular and irregular nebulae properly so called, of globular clusters in every stage of resolvability, and of clustering groups sufficiently insulated and condensed to come under the designation of ‘cluster of stars.’”—“Cape Observations,” p. 146.

In his “*Outlines of Astronomy*,” Sir John Herschel, after repeating this description in other words, goes on to remark that—

“This combination of characters, rightly considered, is in a high degree instructive, affording an insight into the probable comparative distance of *stars* and *nebulae*, and the real brightness of individual stars as compared with one another. Taking the apparent semi-diameter of the nubecula major at three degrees, and regarding its solid form as, roughly speaking, spherical, its nearest and most remote parts differ in their distance from us by a little more than a tenth part of our distance from its centre. The brightness of objects situated in its nearer portions, therefore, cannot be *much* exaggerated, nor that of its remoter *much* enfeebled, by their difference of distance. Yet within this globular space we have collected upwards of six hundred stars of the seventh, eighth, ninth, and tenth magnitude, nearly three hundred nebulae, and globular and other clusters of all degrees of resolvability, and smaller scattered stars of every inferior magnitude, from the tenth to such as by their multitude and minuteness constitute irresolvable nebulosity, extending over tracts of many square degrees. Were there but one such object, it might be maintained without utter improbability that its apparent sphericity is only an effect of foreshortening, and that in reality a much greater proportional difference of distance between its nearer and more remote parts exists. But such an adjustment, improbable enough in one case, must be rejected as too much so for fair argument in two. It must, therefore, be taken as a demonstrated fact, that stars of the seventh or eighth magnitude, and irresolvable nebula, may co-exist within limits of distance not differing in proportion more than as nine to ten.”—“Outlines of Astronomy,” pp. 614, 615.

Now, we think this supplies a *reductio ad absurdum* of the doctrine we are combating. It gives us the choice of two incredibilities. If we are to believe that one of these nebulae is so remote that its hundred thousand stars look like a milky spot, invisible to the naked eye; we must also believe that there are single stars so enormous that though removed to this same distance they remain visible. If we accept the other alternative, and say that many nebulae are no further off than our own stars of the eighth magnitude; then it is requisite to say that at a distance not greater than that at which a single star is still faintly visible to the naked eye, there may exist a group of a hundred thousand stars which is invisible to the naked eye. Neither of these positions can be entertained. What, then, is the conclusion that remains? This only:—that the nebulae are not further off from us than

parts of our own sidereal system, of which they must be considered members; and that when they are resolvable into discrete masses, these masses cannot be considered as stars in anything like the ordinary sense of that word.

And now, having seen the untenability of this idea, rashly espoused by sundry astronomers, that the nebulae are extremely remote galaxies; let us consider whether the various appearances they present are not reconcileable with the Nebular Hypothesis.

Given a rare and widely-diffused mass of nebulous matter, having a diameter, say as great as the distance from the Sun to Sirius,<sup>1</sup> what are the successive changes that will take place in it? Mutual gravitation will approximate its atoms; but their approximation will be opposed by atomic repulsion, the overcoming of which implies the evolution of heat. As fast as this heat partially escapes by radiation, further approximation will take place, attended by further evolution of heat, and so on continuously: the processes not occurring separately as here described, but simultaneously, uninterruptedly, and with increasing activity. Eventually, this slow movement of the atoms towards their common centre of gravity, will bring about phenomena of another order. Arguing from the known laws of atomic combination, it will happen that when the nebulous mass has reached a particular stage of condensation — when its internally-situated atoms have approached to within certain distances, have generated a certain amount of heat, and are subject to a certain mutual pressure (the heat and pressure both increasing as the aggregation progresses); some of them will suddenly enter into chemical union. Whether the binary atoms so produced be of kinds such as we know, which is possible; or whether they be of kinds simpler than any we know, which is more

<sup>1</sup> Any objection made to the extreme tenuity this involves, is met by the calculation of Newton, who proved that were a spherical inch of air removed four thousand miles from the Earth, it would expand into a sphere more than filling the orbit of Saturn.

probable; matters not to the argument. It suffices that molecular combination of some species will finally take place. When it does take place, it will be accompanied by a great and sudden disengagement of heat; and until this excess of heat has escaped, the newly-formed binary atoms will remain uniformly diffused, or, as it were, dissolved in the pre-existing nebulous medium. But now mark what must by-and-by happen. When radiation has adequately lowered the temperature, these binary atoms will precipitate; and having precipitated, they will not remain uniformly diffused, but will aggregate into *floculi*: just as water, when precipitated from air, collects into clouds. This *à priori* conclusion is confirmed by the observation of those still extant portions of nebulous matter which constitute comets; for, "that the luminous part of a comet is something in the nature of a smoke, fog, or cloud, suspended in a transparent atmosphere, is evident," says Sir John Herschel. Concluding, then, that a nebulous mass will, in course of time, resolve itself into flocculi of precipitated denser matter, floating in the rarer medium from which they were precipitated, let us inquire what will be the mechanical results. We shall find that they will be quite different from those occurring in the original homogeneous mass; and also quite different from those which would occur among discrete masses dispersed through empty space. Bodies dispersed through empty space, would move in straight lines towards their common centre of gravity. So, too, would bodies dispersed through a resisting medium, provided they were spherical, or of forms presenting symmetrical faces to their lines of movement. But *irregular* bodies dispersed through a resisting medium, will *not* move in straight lines towards their common centre of gravity. A mass which presents an irregular face to its line of movement through a resisting medium, must necessarily be deflected from its original course, by the unequal reactions of the medium on its different sides. Hence each *floculus*, as by analogy we term one of these precipitated



masses of gas or vapour, will acquire a movement, not towards the common centre of gravity, but towards one or other side of it; and this oblique movement, accelerated as well as changed in direction by the increasing centripetal force, but retarded by the resisting medium, will result in a spiral, ending in the common centre of gravity. Observe, however, that this conclusion, valid as far as it goes, by no means proves a common spiral movement of all the flocculi; for as they must not only be varied in their forms, but disposed in all varieties of position, their respective movements will be deflected, not towards one side of the common centre of gravity, but towards various sides. How then can there result a spiral movement common to them all? Very simply. Each flocculus, in describing its spiral course, must give motion to the rarer medium through which it is moving. Now, the probabilities are infinity to one against all the respective motions thus impressed on this rarer medium, exactly balancing each other. And if they do not balance each other, the inevitable result must be a rotation of the whole mass of the rarer medium in one direction. But preponderating momentum in one direction, having caused rotation of the medium in that direction, the rotating medium must in its turn gradually arrest such flocculi as are moving in opposition, and impress its own motion upon them; and thus there will ultimately be formed a rotating medium with suspended flocculi partaking of its motion, while they move in converging spirals towards the common centre of gravity.

Before comparing these conclusions with the facts, let us pursue the reasoning a little further, and observe the subordinate actions, and the endless modifications which will result from them. The respective flocculi must not only be drawn towards their common centre of gravity, but also towards neighbouring flocculi. Hence the whole assemblage of flocculi will break up into subordinate groups: each group concentrating towards its local centre of gravity, and in so doing

acquiring a vortical movement, like that subsequently acquired by the whole nebula. Now, according to circumstances, and chiefly according to the size of the original nebulous mass, this process of local aggregation will produce various results. If the whole nebula is but small, the local groups of flocculi may be drawn into the common centre of gravity before their constituent masses have coalesced with each other. In a larger nebula, these local aggregations may have concentrated into rotating spheroids of vapour, while yet they have made but little approach towards the general focus of the system. In a still larger nebula, where the local aggregations are both greater and more remote from the common centre of gravity, they may have condensed into masses of molten matter before the general distribution of them has greatly altered. In short, as the conditions in each case determine, the discrete masses produced may vary indefinitely in number, in size, in density, in motion, in distribution.

And now let us return to the visible characters of the nebulae, as observed through modern telescopes. Take first the description of those nebulae which, by the hypothesis, must be in an early stage of evolution.

“Among the *irregular nebulae*,” says Sir John Herschel, “may be comprehended all which, to a want of complete, and in most instances, even of partial resolvability by the power of the 20-foot reflector, unite such a deviation from the circular or elliptic form, or such a want of symmetry (with that form) as preclude their being placed in Class 1, or that of regular nebulae. This second class comprises many of the most remarkable and interesting objects in the heavens, as well as the most extensive in respect of the area they occupy.”

And, referring to this same order of objects, M. Arago says:—“The forms of very large diffuse nebulae do not appear to admit of definition; they have no regular outline.”

Now this coexistence of largeness, irresolvability, irregularity, and indefiniteness of outline, is extremely significant. The fact that the largest nebulae are either irresolvable or

very difficult to resolve, might have been inferred *a priori*; seeing that irresolvability, implying that the aggregation of precipitated matter has gone on to but a small extent, will be found in nebulae of wide diffusion. Again, the irregularity of these large, irresolvable nebulae, might also have been expected; seeing that their outlines, compared by Arago to "the fantastic figures which characterize clouds carried away and tossed about by violent and often contrary winds," are similarly characteristic of a mass not yet gathered together by the mutual attraction of its parts. And once more, the fact that these large, irregular, irresolvable nebulae have indefinite outlines—outlines that fade off insensibly into surrounding darkness—is one of like meaning.

Speaking generally (and of course differences of distance negative anything beyond an average statement), the spiral nebulae are smaller than the irregular nebulae, and more resolvable; at the same time that they are not so small as the regular nebulae, and not so resolvable. This is as, according to the hypothesis, it should be. The degree of condensation causing spiral movement, is a degree of condensation also implying masses of flocculi that are larger, and therefore more visible, than those existing in an earlier stage. Moreover, the forms of these spiral nebulae are quite in harmony with the explanation given. The curves of luminous matter which they exhibit, are *not* such as would be described by more or less discrete masses starting from a state of rest, and moving through a resisting medium to a common centre of gravity; but they *are* such as would be described by masses having their movements modified by the rotation of the medium.

In the centre of a spiral nebula is seen a mass both more luminous and more resolvable than the rest. Assume that, in process of time, all the spiral streaks of luminous matter which converge to this centre are drawn into it, as they must be; assume further, that the flocculi or other discrete bodies constituting these luminous streaks aggregate into larger masses at the same time that they approach the central

group, and that the masses forming this central group also aggregate into larger masses (both which are necessary assumptions); and there will finally result a more or less globular group of such larger masses, which will be resolvable with comparative ease. And, as the coalescence and concentration go on, the constituent masses will gradually become fewer, larger, brighter, and more densely collected around the common centre of gravity. See now how completely this inference agrees with observation. "The circular form is that which most commonly characterizes resolvable nebulae," writes Arago. "Resolvable nebulae," says Sir John Herschel, "are almost universally round or oval." Moreover, the centre of each group habitually displays a closer clustering of the constituent masses than elsewhere; and it is shown that, under the law of gravitation, which we know extends to the stars, this distribution is *not* one of equilibrium, but implies progressing concentration. While, just as we inferred that, according to circumstances, the extent to which aggregation has been carried must vary; so we find that, in fact, there are regular nebulae of all degrees of resolvability, from those consisting of innumerable minute discrete masses, to those in which there are a few large bodies worthy to be called stars.

On the one hand, then, we see that the notion, of late years uncritically received, that the nebulae are extremely remote galaxies of stars like those which make up our own Milky Way, is totally irreconcilable with the facts—involves us in sundry absurdities. On the other hand, we see that the hypothesis of nebular condensation harmonizes with the most recent results of stellar astronomy: nay more—that it supplies us with an explanation of various appearances which in its absence would be incomprehensible.

Descending now to the Solar System, let us consider first a class of phenomena in some sort transitional—those offered by comets. In comets we have now existing a kind of matter

like that out of which, according to the Nebular Hypothesis, the Solar System was evolved. For the explanation of them, we must hence go back to the time when the substances forming the sun and planets were yet unconcentrated.

When diffused matter, precipitated from a rarer medium, is aggregating, there are certain to be here and there produced small flocculi, which, either in consequence of local currents or the conflicting attractions of adjacent masses, remain detached; as do, for instance, minute shreds of cloud in a summer sky. In a concentrating nebula these will, in the great majority of cases, eventually coalesce with the larger flocculi near to them. But it is tolerably evident that some of the remotest of these small flocculi, formed at the outermost parts of the nebula, will *not* coalesce with the larger internal masses, but will slowly follow without overtaking them. The relatively greater resistance of the medium necessitates this. As a single feather falling to the ground will be rapidly left behind by a pillow-full of feathers; so, in their progress to the common centre of gravity, will the outermost shreds of vapour be left behind by the great masses of vapour internally situated. But we are not dependent merely on reasoning for this belief. Observation shows us that the less concentrated external parts of nebulae, *are* left behind by the more concentrated, internal parts. Examined through high powers, all nebulae, even when they have assumed regular forms, are seen to be surrounded by luminous streaks, of which the directions show that they are being drawn into the general mass. Still higher powers bring into view still smaller, fainter, and more widely-dispersed streaks. And it cannot be doubted that the minute fragments which no telescopic aid makes visible, are yet more numerous and widely dispersed. Thus far, then, inference and observation are at one.

Granting that the great majority of these outlying portions of nebulous matter will be drawn into the central mass long before it reaches a definite form, the presumption is that some

of the very small, far-removed portions will not be so; but that before they arrive near it, the central mass will have contracted into a comparatively moderate bulk. What now will be the characters of these late-arriving portions?

In the first place, they will have extremely eccentric orbits. Left behind at a time when they were moving towards the centre of gravity in slightly-deflected lines, and therefore having but very small angular velocities, they will approach the central mass in greatly elongated ellipses; and rushing round it will go off again into space. That is, they will behave just as we see comets do; whose orbits are usually so eccentric as to be indistinguishable from parabolas.

In the second place, they will come from all parts of the heavens. Our supposition implies that they were left behind at a time when the nebulous mass was of irregular shape, and had not acquired a definite rotary motion; and as the separation of them would not be from any one surface of the nebulous mass more than another, the conclusion must be that they will come to the central body from various directions in space. This, too, is exactly what happens. Unlike planets, whose orbits approximate to one plane, comets have orbits that show no relation to each other; but cut the plane of the ecliptic at all angles.

In the third place, applying the reasoning already used, these remotest flocculi of nebulous matter will, at the outset, be deflected from their straight courses to the common centre of gravity, not all on one side, but each on such side as its form determines. And being left behind before the rotation of the nebula is set up, they will severally retain their different individual motions. Hence, following the concentrating mass, they will eventually go round it on all sides; and as often from right to left as from left to right. Here again the inference perfectly corresponds with the facts. While all the planets go round the sun from west to east, comets as often go round the sun from east to west as from west to east. Out of 210 comets known in 1855, 104 are

direct, and 106 are retrograde. This equality is what the law of probabilities would indicate.

Then, in the fourth place, the physical constitution of comets completely accords with the hypothesis. The ability of nebulous matter to concentrate into a concrete form, depends on its mass. To bring its ultimate atoms into that proximity requisite for chemical union—requisite, that is, for the production of denser matter—their repulsion must be overcome. The only force antagonistic to their repulsion, is their mutual gravitation. That their mutual gravitation may generate a pressure and temperature of sufficient intensity, there must be an enormous accumulation of them; and even then the approximation can slowly go on only as fast as the evolved heat escapes. But where the quantity of atoms is small, and therefore the force of mutual gravitation small, there will be nothing to coerce the atoms into union. Whence we infer that these detached fragments of nebulous matter will continue in their original state. We find that they do so. Comets consist of an extremely rare medium, which, as shown by the description already quoted from Sir John Herschel, has characters like those we concluded would belong to partially-condensed nebulous matter.

Yet another very significant fact is seen in the distribution of comets. Though they come from all parts of the heavens, they by no means come in equal abundance from all parts of the heavens; but are far more numerous about the poles of the ecliptic than about its plane. Speaking generally, comets having orbit-planes that are highly inclined to the ecliptic, are comets having orbits of which the major axes are highly inclined to the ecliptic—comets that come from high latitudes. This is not a necessary connexion; for the planes of the orbits *might* be highly inclined to the ecliptic while the major axes were inclined to it very little. But in the absence of any habitually-observed relation of this kind, it may safely be concluded that, *on the average*, highly-inclined cometary orbits are cometary orbits with highly-inclined major axes;

and that thus, a predominance of cometary orbits cutting the plane of the ecliptic at great angles, implies a predominance of cometary orbits having major axes that cut the ecliptic at great angles. Now the predominance of highly inclined cometary orbits, may be gathered from the following table, compiled by M. Arago, to which we have added a column giving the results up to a date two years later.

Inclinations.	Number of Comets in 1831.	Number of Comets in 1853.	Number of Comets in 1855.
From 0 to 10	9	19	19
„ 10 „ 20	13	18	19
„ 20 „ 30	10	13	14
„ 30 „ 40	17	22	22
„ 40 „ 50	14	35	36
„ 50 „ 60	23	27	29
„ 60 „ 70	17	23	25
„ 70 „ 80	19	26	27
„ 80 „ 90	15	18	19
Total ...	137	201	210

At first sight this table seems not to warrant our statement. Assuming the alleged general relation between the inclinations of cometary orbits, and the directions in space from which the comets come, the table may be thought to show that the frequency of comets increases as we progress from the plane of the ecliptic up to  $45^\circ$ , and then decreases up to  $90^\circ$ . But this apparent diminution arises from the fact that the successive zones of space rapidly diminish in their areas on approaching the poles. If we allow for this, we shall find that the excess of comets continues to increase up to the highest angles of inclination. In the table below, which, for convenience, is arranged in inverted order, we have taken as standards of comparison the area of the zone round the pole, and the number of comets it contains; and having ascertained the areas of the other zones, and the numbers of



comets they should contain were comets equally distributed, we have shown how great becomes the deficiency in descending from the poles of the ecliptic to its plane.

Between		Area of Zone.	Number of Comets, if equally distributed.	Actual Number of Comets.	Deficiency.	Relative Abundance.
Deg.	Deg.					
90	and 80	1	19	19	0	11·5
80	„ 70	2·98	56·6	27	29·6	5·5
70	„ 60	4·85	92	25	67	3·12
60	„ 50	6·6	125	29	96	2·66
50	„ 40	8·13	154	36	118	2·68
40	„ 30	9·42	179	22	157	1·4
30	„ 20	10·42	198	14	184	0·8
20	„ 10	11·1	210	19	191	1·04
10	„ 0	11·5	218	19	199	1

In strictness, the calculation should be made with reference, not to the plane of the ecliptic, but to the plane of the sun's equator; and this might or might not render the progression more regular. Probably, too, the progression would be made somewhat different were the calculation based; as it should be, not on the inclinations of orbit-planes, but on the inclinations of major axes. But even as it is, the result is sufficiently significant: since, though the conclusion that comets are 11·5 times more abundant about the poles of the ecliptic than about its plane, can be but a rough approximation to the truth; yet no correction of it is likely very much to change this strong contrast.

What, then, is the meaning of this fact? It has several meanings. It negatives the supposition, favoured by Laplace among others, that comets are bodies that were wandering in space, or have come from other systems; for the probabilities are infinity to one against the orbits of such wandering bodies showing any definite relation to the plane of the Solar System. For the like reason, it negatives the hypothesis of Lagrange, otherwise objectionable, that comets have re-

sulted from planetary catastrophes analogous to that which is supposed to have produced the asteroids. It clearly shows that, instead of comets being *accidental* members of the Solar System, they are *necessary* members of it—have as distinct a structural relation to it as the planets themselves. That comets are abundant round the axis of the Solar System, and grow rarer as we approach its plane, implies that the genesis of comets has followed some *law*—a law in some way concerned with the genesis of the Solar System. If we ask for any so-called final cause of this arrangement, none can be assigned: until a probable use for comets has been shown, no reason can be given why they should be thus distributed. But when we consider the question as one of physical science, we see that comets are antithetical to planets, not only in their great rarity, in their motions as indifferently direct or retrograde, in their eccentric orbits, and in the varied directions of those orbits; but we see the antithesis further marked in this, that while planets have some relation to the plane of nebular rotation, comets have some relation to the axis of nebular rotation.<sup>1</sup> And without attempting to explain the nature of this relation, the mere fact that such a relation exists, indicates that comets have resulted from a process of evolution—points to a past time when the matter now forming the Solar System extended to those distant regions of space which comets visit.

See, then, how differently this class of phenomena bears on the antagonistic hypotheses. To the hypothesis commonly received, comets are stumbling-blocks: why there should be hundreds (or probably thousands) of extremely rare aeriform masses rushing to and fro round the sun, it cannot say; any more than it can explain their physical constitutions, their various and eccentric movements, or their distribution. The hypothesis of evolution, on the other hand, not only allows of

<sup>1</sup> It is alike remarkable and suggestive, that a parallel relation exists between the distribution of nebulae and the axis of our galaxy. Just as comets are abundant around the poles of our Solar System, and rare in the neighbourhood of its plane; so are nebulae abundant around the poles of our sidereal system, and rare in the neighbourhood of its plane.

the general answer, that they are minor results of the genetic process ; but also furnishes us with something like explanations of their several peculiarities.

And now, leaving these erratic bodies, let us turn to the more familiar and important members of the Solar System. It was the remarkable harmony subsisting among their movements, which first made Laplace conceive that the sun, planets, and satellites had resulted from a common genetic process. As Sir William Herschel, by his observations on the nebulae, was led to the conclusion that stars resulted from the aggregation of diffused matter ; so Laplace, by his observations on the structure of the Solar System, was led to the conclusion that only by the rotation of aggregating matter were its peculiarities to be explained. In his "Exposition du Système du Monde," he enumerates as the leading evidences of evolution :—1. The movements of the planets in the same direction and almost in the same plane ; 2. The movements of the satellites in the same direction as those of the planets ; 3. The movement of rotation of these various bodies and of the sun in the same direction as the orbital motions, and in planes little different ; 4. The small eccentricity of the orbits of the planets and satellites, as contrasted with the great eccentricity of the cometary orbits. And the probability that these harmonious movements had a common cause, he calculates as two hundred thousand billions to one. Observe that this immense preponderance of probability does not point to a common cause under the form ordinarily conceived—an Invisible Power working after the method of "a Great Artificer ;" but to an Invisible Power working after the method of evolution. For though the supporters of the common hypothesis may argue that it was necessary for the sake of stability that the planets should go round the sun in the same direction and nearly in one plane, they cannot thus account for the direction of the axial motions. The mechanical equilibrium would not have been at all interfered with, had the

sun been without any rotatory movement ; or had he revolved on his axis in a direction opposite to that in which the planets go round him ; or in a direction at right angles to the plane of their orbits. With equal safety the motion of the Moon round the Earth might have been the reverse of the Earth's motion round its axis ; or the motion of Jupiter's satellites might similarly have been at variance with his axial motion ; or that of Saturn's satellites with his. As, however, none of these alternatives have been followed, the uniformity must be considered, in this case as in all others, evidence of subordination to some general law—implies what we call natural causation, as distinguished from arbitrary arrangement.

Hence the hypothesis of evolution would be the only probable one, even in the absence of any clue to the particular mode of evolution. But when we have, propounded by a mathematician whose authority is second to none, a definite theory of this evolution based on established mechanical laws, which accounts for these various peculiarities, as well as for many minor ones, the conclusion that the Solar System *was* evolved becomes almost irresistible.

The general nature of Laplace's theory scarcely needs stating. Books of popular astronomy have familiarized most readers with his conceptions ;—namely, that the matter now condensed into the Solar System, once formed a vast rotating spheroid of extreme rarity extending beyond the orbit of Neptune ; that as this spheroid contracted, its rate of rotation necessarily increased ; that by augmenting centrifugal force its equatorial zone was from time to time prevented from following any further the concentrating mass, and so remained behind as a revolving ring ; that each of the revolving rings thus periodically detached, eventually became ruptured at its weakest point, and, contracting on itself, gradually aggregated into a rotating mass ; that this, like the parent mass, increased in rapidity of rotation as it decreased in size, and, where the centrifugal force was sufficient, similarly threw off rings, which finally collapsed into rotating spheroids ; and

that thus out of these primary and secondary rings there arose planets and their satellites, while from the central mass there resulted the sun. Moreover, it is tolerably well known that this *à priori* reasoning harmonizes with the results of experiment. Dr. Plateau has shown that when a mass of fluid is, as far as may be, protected from the action of external forces, it will, if made to rotate with adequate velocity, form detached rings; and that these rings will break up into spheroids which turn on their axes in the same direction with the central mass. Thus, given the original nebula, which, acquiring a vortical motion in the way we have explained, has at length concentrated into a vast spheroid of aeriform matter moving round its axis—given this, and mechanical principles explain the rest. The genesis of a solar system displaying movements like those observed, may be predicted; and the reasoning on which the prediction is based is countenanced by experiment.<sup>1</sup>

But now let us inquire whether, besides these most conspicuous peculiarities of the Solar System, sundry minor ones are not similarly explicable. Take first the relation between the planes of the planetary orbits and the plane of the sun's equator. If, when the nebulous spheroid extended beyond the orbit of Neptune, all parts of it had been revolving exactly in the same plane, or rather in parallel planes—if all its parts had had one axis; then the planes of the successive rings would have been coincident with each other and with that of the sun's rotation. But it needs only to go back to

<sup>1</sup> It is true that, as expressed by him, these propositions of Laplace are not all beyond dispute. An astronomer of the highest authority, who has favoured me with some criticisms on this essay, alleges that instead of a nebulous ring rupturing at one point, and collapsing into a single mass, "all probability would be in favour of its breaking up into many masses." This alternative result certainly seems the more likely. But granting that a nebulous ring would break up into many masses, it may still be contended that, since the chances are infinity to one against these being of equal sizes and equidistant, they could not remain evenly distributed round their orbit: this annular chain of gaseous masses would break up into groups of masses; these groups would eventually aggregate into larger groups; and the final result would be the formation of a single mass. I have put the question to an astronomer scarcely second in authority to the one above referred to, and he agrees that this would probably be the process.

the earlier stages of concentration, to see that there could exist no such complete uniformity of motion. The flocculi, already described as precipitated from an irregular and widely-diffused nebula, and as starting from all points to their common centre of gravity, must move not in one plane but in innumerable planes, cutting each other at all angles. The gradual establishment of a vortical motion such as we saw must eventually arise, and such as we at present see indicated in the spiral nebulae, is the gradual approach towards motion in one plane—the plane of greatest momentum. But this plane can only slowly become decided. Flocculi not moving in this plane, but entering into the aggregation at various inclinations, will tend to perform their revolutions round its centre in their own planes; and only in course of time will their motions be partly destroyed by conflicting ones, and partly resolved into the general motion. Especially will the outermost portions of the rotating mass retain for long time their more or less independent directions; seeing that neither by friction nor by the central forces will they be so much restrained. Hence the probabilities are, that the planes of the rings first detached will differ considerably from the average plane of the mass; while the planes of those detached latest will differ from it less. Here, again, inference to a considerable extent agrees with observation. Though the progression is irregular, yet on the average the inclinations decrease on approaching the sun.

Consider next the movements of the planets on their axes. Laplace alleged as one among other evidences of a common genetic cause, that the planets rotate in a direction the same as that in which they go round the sun, and on axes approximately perpendicular to their orbits. Since he wrote, an exception to this general rule has been discovered in the case of Uranus, and another still more recently in the case of Neptune—judging, at least, from the motions of their respective satellites. This anomaly has been thought to throw considerable doubt on his speculation; and at first

sight it does so. But a little reflection will, we believe, show that the anomaly is by no means an insoluble one; and that Laplace simply went too far in putting down as a certain result of nebular genesis, what is, in some instances, only a probable result. The cause he pointed out as determining the direction of rotation, is the greater absolute velocity of the outer part of the detached ring. But there are conditions under which this difference of velocity may be relatively insignificant, even if it exists; and others in which, though existing to a considerable extent, it will not suffice to determine the direction of rotation. Note, in the first place, that in virtue of their origin, the different strata of a concentrating nebulous spheroid, will be very unlikely to move with equal angular velocities: only by friction continued for an indefinite time will their angular velocities be made uniform; and especially will the outermost strata, for reasons just now assigned, maintain for the longest time their differences of movement. Hence, it is possible that in the rings first detached the outer rims may not have greater absolute velocities; and thus the resulting planets may have retrograde rotations. Again, the sectional form of the ring is a circumstance of moment; and this form must have differed more or less in every case. To make this clear, some illustration will be necessary. Suppose we take an orange, and, assuming the marks of the stalk and the calyx to represent the poles, cut off round the line of the equator a strip of peel. This strip of peel, if placed on the table with its ends meeting, will make a ring shaped like the hoop of a barrel—a ring whose thickness in the line of its diameter is very small, but whose width in a direction perpendicular to its diameter is considerable. Suppose, now, that in place of an orange, which is a spheroid of very slight oblateness, we take a spheroid of very great oblateness, shaped somewhat like a lens of small convexity. If from the edge or equator of this lens-shaped spheroid, a ring of moderate size were cut off, it would be unlike the previous ring in this respect, that its greatest

thickness would be in the line of its diameter, and not in a line at right angles to its diameter : it would be a ring shaped somewhat like a quoit, only far more slender. That is to say, according to the oblateness of a rotating spheroid, the detached ring may be either a hoop-shaped ring or a quoit-shaped ring. One further fact must be noted. In a much-flattened or lens-shaped spheroid, the form of the ring will vary with its bulk. A very slender ring, taking off just the equatorial surface, will be hoop-shaped ; while a tolerably massive ring, trenching appreciably on the diameter of the spheroid, will be quoit-shaped. Thus, then, according to the oblateness of the spheroid and the bulkiness of the detached ring, will the greatest thickness of that ring be in the direction of its plane, or in a direction perpendicular to its plane. But this circumstance must greatly affect the rotation of the resulting planet. In a decidedly hoop-shaped nebulous ring, the differences of velocity between the inner and outer surfaces will be very small ; and such a ring, aggregating into a mass whose greatest diameter is at right angles to the plane of the orbit, will almost certainly give to this mass a predominant tendency to rotate in a direction at right angles to the plane of the orbit. Where the ring is but little hoop-shaped, and the difference of the inner and outer velocities also greater, as it must be, the opposing tendencies—one to produce rotation in the plane of the orbit, and the other rotation perpendicular to it—will both be influential ; and an intermediate plane of rotation will be taken up. While, if the nebulous ring is decidedly quoit-shaped, and therefore aggregates into a mass whose greatest dimension lies in the plane of the orbit, both tendencies will conspire to produce rotation in that plane.

On referring to the facts, we find them, as far as can be judged, in harmony with this view. Considering the enormous circumference of Uranus's orbit, and his comparatively small mass, we may conclude that the ring from which he resulted was a comparatively slender, and therefore a hoop-shaped



one: especially if the nebulous mass was at that time less oblate than afterwards, which it must have been. Hence, a plane of rotation nearly perpendicular to his orbit, and a direction of rotation having no reference to his orbital movement. Saturn has a mass seven times as great, and an orbit of less than half the diameter; whence it follows that his genetic ring, having less than half the circumference, and less than half the vertical thickness (the spheroid being then certainly *as* oblate, and indeed *more* oblate), must have had considerably greater width—must have been less hoop-shaped, and more approaching to the quoit-shaped: notwithstanding difference of density, it must have been at least two or three times as broad in the line of its plane. Consequently, Saturn has a rotatory movement in the same direction as the movement of translation, and in a plane differing from it by thirty degrees only. In the case of Jupiter, again, whose mass is three and a half times that of Saturn, and whose orbit is little more than half the size, the genetic ring must, for the like reasons, have been still broader—decidedly quoit-shaped, we may say; and there hence resulted a planet whose plane of rotation differs from that of his orbit by scarcely more than three degrees. Once more, considering the comparative insignificance of Mars, Earth, Venus, and Mercury, it follows that the diminishing circumferences of the rings not sufficing to account for the smallness of the resulting masses, the rings must have been slender ones—must have again approximated to the hoop-shaped; and thus it happens that the planes of rotation again diverge more or less widely from those of the orbits. Taking into account the increasing oblateness of the original spheroid in the successive stages of its concentration, and the different proportions of the detached rings, it seems to us that the respective rotatory motions are not at variance with the hypothesis.

Not only the directions, but also the velocities of rotation are thus explicable. It might naturally be supposed that the large planets would revolve on their axes more slowly

than the small ones : our terrestrial experiences incline us to expect this. It is a corollary from the Nebular Hypothesis, however, more especially when interpreted as above, that while large planets will rotate rapidly, small ones will rotate slowly ; and we find that in fact they do so. Other things equal, a concentrating nebulous mass that is diffused through a wide space, and whose outer parts have, therefore, to travel from great distances to the common centre of gravity, will acquire a high axial velocity in the course of its aggregation ; and conversely with a small mass. Still more marked will be the difference where the form of the genetic ring conspires to increase the rate of rotation. Other things equal, a genetic ring that is broadest in the direction of its plane will produce a mass rotating faster than one that is broadest at right angles to its plane ; and if the ring is absolutely as well as relatively broad, the rotation will be very rapid. These conditions were, as we saw, fulfilled in the case of Jupiter ; and Jupiter goes round his axis in less than ten hours. Saturn, in whose case, as above explained, the conditions were less favourable to rapid rotation, takes ten hours and a half. While Mars, Earth, Venus, and Mercury, whose rings must have been slender, take more than double the time : the smallest taking the longest.

From the planets, let us now pass to the satellites. Here, beyond the conspicuous facts commonly adverted to, that they go round their primaries in the same directions that these turn on their axes, in planes diverging but little from their equators, and in orbits nearly circular, there are several significant traits which must not be passed over.

One of them is, that each set of satellites repeats in miniature the relations of the planets to the sun, both in the respects just named, and in the order of the sizes. On progressing from the outside of the Solar System to its centre, we see that there are four large external planets, and four internal ones which are comparatively small. A like contrast holds between the outer and inner satellites in every

case. Among the four satellites of Jupiter, the parallel is maintained as well as the comparative smallness of the number allows: the two outer ones are the largest, and the two inner ones the smallest. According to the most recent observations made by Mr. Lassell, the like is true of the four satellites of Uranus. In the case of Saturn, who has eight secondary planets revolving round him, the likeness is still more close in arrangement as in number: the three outer satellites are large, the inner ones small; and the contrasts of size are here much greater between the largest, which is nearly as big as Mars, and the smallest, which is with difficulty discovered even by the best telescopes. Moreover, the analogy does not end here. Just as with the planets, there is at first a general increase of size on travelling inwards from Neptune and Uranus, which do not differ very widely, to Saturn, which is much larger, and to Jupiter, which is the largest; so of the eight satellites of Saturn, the largest is not the outermost, but the outermost save two; so of Jupiter's four secondaries, the largest is the most remote but one. Now these analogies are inexplicable by the theory of final causes. For purposes of lighting, if this be the presumed object of these attendant bodies, it would have been far better had the larger been the nearer: at present, their remoteness renders them of less service than the smallest. To the Nebular Hypothesis, however, these analogies give further support. They show the action of a common physical cause. They imply a *law* of genesis, holding in the secondary systems as in the primary system.

Still more instructive shall we find the distribution of the satellites—their absence in some instances, and their presence in other instances, in smaller or greater numbers. The argument from design fails to account for this distribution. Supposing it be granted that planets nearer the Sun than ourselves, have no need of moons (though, considering that their nights are as dark, and, relatively to their brilliant days, even darker than ours, the need seems quite as great)—

supposing this be granted; what is to be said of Mars, which, placed half as far again from the Sun as we are, has yet no moon? Or again, how are we to explain the fact that Uranus has but half as many moons as Saturn, though he is at double the distance? While, however, the current presumption is untenable, the Nebular Hypothesis furnishes us with an explanation. It actually enables us to predict, by a not very complex calculation, where satellites will be abundant and where they will be absent. The reasoning is as follows.

In a rotating nebulous spheroid that is concentrating into a planet, there are at work two antagonist mechanical tendencies—the centripetal and the centrifugal. While the force of gravitation draws all the atoms of the spheroid together, their tangential momentum is resolvable into two parts, of which one resists gravitation. The ratio which this centrifugal force bears to gravitation, varies, other things equal, as the square of the velocity. Hence, the aggregation of a rotating nebulous spheroid will be more or less strongly opposed by this outward impetus of its particles, according as its rate of rotation is high or low: the opposition, in equal spheroids, being four times as great when the rotation is twice as rapid; nine times as great when it is three times as rapid; and so on. Now, the detachment of a ring from a planet-forming body of nebulous matter, implies that at its equatorial zone the centrifugal force produced by concentration has become so great as to balance gravity. Whence it is tolerably obvious that the detachment of rings will be most frequent from those masses in which the centrifugal tendency bears the greatest ratio to the gravitative tendency. Though it is not possible to calculate what proportions these two tendencies had to each other in the genetic spheroid which produced each planet; it is possible to calculate where each was the greatest and where the least. While it is true that the ratio which centrifugal force now bears to gravity at the equator of each planet, differs widely from that which it bore during the earlier stages of concentration; and

while it is true that this change in the ratio, depending on the degree of contraction each planet has undergone, has in no two cases been the same; yet we may fairly conclude that where the ratio is still the greatest, it has been the greatest from the beginning. The satellite-forming tendency which each planet had, will be approximately indicated by the proportion now existing in it between the aggregating power and the power that has opposed aggregation. On making the requisite calculations, a remarkable harmony with this inference comes out. The following table shows what fraction the centrifugal force is of the centripetal force in every case; and the relation which that fraction bears to the number of satellites.

Mercury.	Venus.	Earth.	Mars.	Jupiter.	Saturn.	Uranus.
$\frac{1}{362}$	$\frac{1}{282}$	$\frac{1}{289}$	$\frac{1}{326}$	$\frac{1}{14}$	$\frac{1}{6.2}$	$\frac{1}{9}$
		1 Satellite.		4 Satellites.	8 Satellites and three rings.	4 (or 6 ac- cording to Herschel).

Thus, taking as our standard of comparison the Earth with its one moon, we see that Mercury and Mars, in which the centrifugal force is relatively less, have no moons. Jupiter, in which it is far greater, has four moons. Uranus, in which it is greater still, has certainly four, and probably more than four. Saturn, in which it is the greatest, being nearly one-sixth of gravity, has, including his rings, eleven attendants. The only instance in which there is imperfect conformity with observation is that of Venus. Here it appears that the centrifugal force is relatively a very little greater than in the Earth; and according to the hypothesis, Venus ought, therefore, to have a satellite. Of this seeming anomaly there are two explanations. Not a few astronomers have asserted that Venus *has* a satellite. Cassini, Short, Montaigne of Limoges, Roedkier, and Montbarron, professed to have seen it; and Lambert calculated its elements. Granting, however, that they were mistaken, there is still the fact that the

diameter of Venus is variously estimated; and that a very small change in the data would make the fraction less instead of greater than that of the Earth. But admitting the discrepancy, we think that this correspondence, even as it now stands, is one of the strongest confirmations of the Nebular Hypothesis.<sup>1</sup>

Certain more special peculiarities of the satellites must be mentioned as suggestive. One of them is the relation between the period of revolution and that of rotation. No discoverable purpose is served by making the Moon go round its axis in the same time that it goes round the Earth: for our convenience, a more rapid axial motion would have been equally good; and for any possible inhabitants of the Moon, much better. Against the alternative supposition, that the equality occurred by accident, the probabilities are, as Laplace says, infinity to one. But to this arrangement, which is explicable neither as the result of design nor of chance, the Nebular Hypothesis furnishes a clue. In his "Exposition du Système du Monde," Laplace shows, by reasoning too detailed to be here repeated, that under the circumstances such a relation of movements would be likely to establish itself.

Among Jupiter's satellites, which severally display these same synchronous movements, there also exists a still more remarkable relation. "If the mean angular velocity of the first satellite be added to twice that of the third, the sum will be equal to three times that of the second;" and "from this it results that the situations of any two of them being given, that of the third can be found." Now here, as before, no conceivable advantage results. Neither in this case can the connexion have been accidental: the probabilities are infinity to one to the contrary. But again, according to Laplace,

<sup>1</sup> Since this essay was published, the data of the above calculations have been changed by the discovery that the Sun's distance is three millions of miles less than was supposed. Hence results a diminution in his estimated mass, and in the masses of the planets (except the Earth and Moon). No revised estimate of the masses having yet been published, the table is re-printed in its original form. The diminution of the masses to the alleged extent of about one-tenth, does not essentially alter the relations above pointed out.

the Nebular Hypothesis supplies a solution. Are not these significant facts?

Most significant fact of all, however, is that presented by the rings of Saturn. As Laplace remarks, they are, as it were, still extant witnesses of the genetic process he propounded. Here we have, continuing permanently, forms of matter like those through which each planet and satellite once passed; and their movements are just what, in conformity with the hypothesis, they should be. "La durée de la rotation d'une planète doit donc être, d'après cette hypothèse, plus petite que la durée de la révolution du corps le plus voisin qui circule autour d'elle," says Laplace.<sup>1</sup> And he then points out that the time of Saturn's rotation is to that of his rings as 427 to 438—an amount of difference such as was to be expected.

But besides the existence of these rings, and their movements in the required manner, there is a highly suggestive circumstance which Laplace has not remarked—namely, the place of their occurrence. If the Solar System was produced after the manner popularly supposed, then there is no reason why the rings of Saturn should not have encircled him at a comparatively great distance. Or, instead of being given to Saturn, who in their absence would still have had eight satellites, such rings might have been given to Mars, by way of compensation for a moon. Or they might have been given to Uranus, who, for purposes of illumination, has far greater need of them. On the common hypothesis, we repeat, no reason can be assigned for their existence in the place where we find them. But on the hypothesis of evolution, the arrangement, so far from offering a difficulty, offers another confirmation. These rings are found where alone they could have been produced—close to the body of a planet whose centrifugal force bears a great proportion to his gravitative force. That permanent rings should exist at any great distance from a planet's body, is, on the Nebular Hypothesis,

<sup>1</sup> "Mécanique Céleste," p. 346.

manifestly impossible. Rings detached early in the process of concentration, and therefore consisting of gaseous matter having extremely little power of cohesion, can have no ability to resist the disrupting forces due to imperfect balance; and must, therefore, collapse into satellites. A liquid ring is the only one admitting of permanence. But a liquid ring can be produced only when the aggregation is approaching its extreme—only when gaseous matter is passing into liquid, and the mass is about to assume the planetary form. And even then it cannot be produced save under special conditions. Gaining a rapidly-increasing preponderance, as the gravitative force does during the closing stages of concentration, the centrifugal force cannot in ordinary cases cause the detachment of rings when the mass has become dense. Only where the centrifugal force has all along been very great, and remains powerful to the last, as in Saturn, can liquid rings be formed. Thus the Nebular Hypothesis shows us why such appendages surround Saturn, but exist nowhere else.

And then, let us not forget the fact, discovered within these few years, that Saturn possesses a *nebulous* ring, through which his body is seen as through a thick veil. In a position where alone such a thing seems preservable—suspended, as it were, between the denser rings and the planet—there still continues one of these annular masses of diffused matter from which satellites and planets are believed to have originated.

We find, then, that besides those most conspicuous peculiarities of the Solar System which first suggested the theory of its evolution, there are many minor ones pointing in the same direction. Were there no other evidence, these mechanical arrangements would, considered in their totality, go far to establish the Nebular Hypothesis.

From the mechanical arrangements of the Solar System, turn we now to its physical characters; and, first, let us consider the inferences deducible from relative specific gravities.

The fact that, speaking generally, the denser planets are



the nearer to the Sun, is by some considered as adding another to the many indications of nebular origin. Legitimately assuming that the outermost parts of a rotating nebulous spheroid, in its earlier stages of concentration, will be comparatively rare; and that the increasing density which the whole mass acquires as it contracts, must hold of the outermost parts as well as the rest; it is argued that the rings successively detached will be more and more dense, and will form planets of higher and higher specific gravities. But passing over other objections, this explanation is quite inadequate to account for the facts. Using the Earth as a standard of comparison, the relative densities run thus:—

Neptune.	Uranus.	Saturn.	Jupiter.	Mars.	Earth.	Venus.	Mercury.	Sun.
0·14	0·24	0·14	0·24	0·95	1·00	0·92	1·12	0·25

Two seemingly insurmountable objections are presented by this series. The first is, that the progression is but a broken one. Neptune is as dense as Saturn, which, by the hypothesis, it ought not to be. Uranus is as dense as Jupiter, which it ought not to be. Uranus is denser than Saturn, and the Earth is denser than Venus—facts which not only give no countenance to, but directly contradict, the alleged explanation. The second objection, still more manifestly fatal, is the low specific gravity of the Sun. If, when the matter of the Sun filled the orbit of Mercury, its state of aggregation was such that the detached ring formed a planet having a specific gravity equal to that of iron; then the Sun itself, now that it has concentrated, should have a specific gravity much greater than that of iron; whereas its specific gravity is not much above that of water. Instead of being far denser than the nearest planet, it is not one-fourth as dense. And a parallel relation holds between Jupiter and his smallest satellite.<sup>1</sup>

While these anomalies render untenable the position that

<sup>1</sup> The impending revision of the estimated masses of the planets, entailed by the discovery that the Sun's distance is less than was supposed, will alter these specific gravities. It will make most of the contrasts still stronger.

the relative specific gravities of the planets are direct indications of nebular condensation ; it by no means follows that they negative it. On the contrary, we believe that the facts admit of an interpretation quite consistent with the hypothesis of Laplace.

There are three possible causes of unlike specific gravities in the members of our Solar System :—1. Differences between the kinds of matter or matters composing them. 2. Differences between the quantities of matter ; for, other things equal, the mutual gravitation of atoms will make a large mass denser than a small one. 3. Differences between the structures : the masses being either solid or liquid throughout, or having central cavities filled with elastic aeriform substance. Of these three conceivable causes, that commonly assigned is the first, more or less modified by the second. The extremely low specific gravity of Saturn, which but little exceeds that of cork (and, on this hypothesis, must at his surface be considerably less than that of cork) is supposed to arise from the intrinsic lightness of his substance. That the Sun weighs not much more than an equal bulk of water, is taken as evidence that the matter he consists of is but little heavier than water ; although, considering his enormous gravitative force, which at his surface is twenty-eight times the gravitative force at the surface of the Earth, and considering his enormous mass, which is 390,000 times that of the Earth, the matter he is made of can, in such case, have no analogy to the liquids or solids we know. However, spite of these difficulties, the current hypothesis is, that the Sun and planets, inclusive of the Earth, are either solid or liquid, or have solid crusts with liquid nuclei : their unlike specific gravities resulting from unlikenesses of substance. And indeed, at first sight, this would seem to be the only tenable supposition ; seeing that, unless prevented by some immense resisting force, gravitation must obliterate any internal cavity by collapsing the surrounding liquid or solid matter.

Nevertheless, that the Earth, in common with other mem-

bers of the Solar System, is solid, or else consists of a solid shell having a cavity entirely filled with molten matter, is not an established fact: it is nothing but a supposition. We must not let its familiarity and apparent feasibility delude us into an uncritical acceptance of it. If we find an alternative supposition which, physically considered, is equally possible, we are bound to consider it. And if it not only avoids the difficulties above pointed out, but many others hereafter to be mentioned, we must give it the preference.

Before proceeding to consider what the Nebular Hypothesis indicates respecting the internal structures of the Sun and planets, we may state that our reasonings, though of a kind not admitting of direct verification, are nothing more than deductions from the established principles of physics. We have submitted them to an authority not inferior to any that can be named; and while unprepared to commit himself to them, he yet sees nothing to object.

Starting, then, with a rotating spheroid of aeriform matter, in the latter stages of its concentration, but before it has begun to take a liquid or solid form, let us inquire what must be the actions going on in it. Mutual gravitation continually aggregates its atoms into a smaller and denser mass; and the aggregating force goes on increasing, as the common centre of gravity is approached. An obstacle to concentration, however, exists in the centrifugal force, which at this stage bears a far higher ratio to gravity than afterwards, and in a gaseous spheroid must produce a very oblate form. At the same time, the approximation of the atoms is resisted by a force which, in being overcome, is evolved as heat. This heat must be greatest where the atoms are subject to the highest pressure—namely, about the central parts. And as fast as it escapes into space, further approximation and further generation of heat must take place. But in a gaseous spheroid, having internal parts hotter than its external parts, there must be some circulation. The currents must set from the hottest region to the coolest by some particular route; and

from the coolest to the hottest by some other route. In a very oblate spheroid, the coolest region must be that about the equator: the surface there bearing so large a ratio to the mass. Hence there will be currents from the centre to the equator, and others from the equator to the centre. What will be the special courses of these currents? Supposing an original state of rest, about to pass into motion in obedience to the disturbing forces, the currents commencing at the centre will follow the lines of most rapidly-decreasing density; seeing that the inertia will be least in those lines. That is to say, there will be a current from the centre towards each pole, along the axis of rotation; and the space thus continually left vacant will be filled by the collapse of matter coming in at right angles to the axis. The process cannot end here, however. If there are constant currents from the centre towards the poles, there must be a constant accumulation at the poles: the spheroid will be ever becoming more protuberant about the poles than the conditions of mechanical equilibrium permit. If, however, the mass at the poles is thus ever in excess, it must, by the forces acting on it, be constantly moved over the outer surface of the spheroid from the poles towards the equator: thus only can that form which rotation necessitates be maintained. And a further result of this transfer of matter from the centre, by way of the poles, to the equator, must be the establishment of counter-currents from the equator in diametrical lines, to the centre.

Mark now the changes of temperature that must occur in these currents. An aeriform mass ascending from the centre towards either pole, will expand as it approaches the surface, in consequence of the diminution of pressure. But expansion, involving an absorption of heat, will entail a diminished temperature; and the temperature will be further lowered by the greater freedom of radiation into space. This rarefied and cooled mass must be still more rarefied and cooled in its progress over the surface of the spheroid to the equator. Continually thrust further from the pole by the ceaseless

accumulation there, it must acquire an ever-increasing rotatory motion and an ever-increasing centrifugal force: whence must follow expansion and absorption of heat. To the refrigeration thus caused must be added that resulting from radiation, which, at each advance towards the equator, will be less hindered. And when the mass we have thus followed arrives at the equator, it will have reached its maximum rarity and maximum coolness. Conversely, every portion of a current proceeding in a diametrical direction from the equator to the centre, must progressively rise in temperature; in virtue alike of the increasing pressure, the gradual arrest of motion, and the diminished rate of radiation. Note, lastly, that this circulation will go on, but slowly. As the matter proceeding from the equator towards the centre must have its rotatory motion destroyed, while that proceeding from the poles to the equator must have rotatory motion given to it, it follows that an enormous amount of inertia has to be overcome; and this must make the currents so slow as to prevent them from producing anything like an equality of temperature.

Such being the constitution of a concentrating spheroid of gaseous matter, where will the gaseous matter begin to condense into liquid? The usual assumption has been, that in a nebulous mass approaching towards the planetary form, the liquefaction will first occur at the centre. We believe this assumption is inconsistent with established physical principles.

Observe first that it is contrary to analogy. That the matter of the Earth was liquid before any of it became solid, is generally admitted. Where has it first solidified? Not at the centre, but at the surface. Now the general principles which apply to the condensation of liquid matter into solid, apply also to the condensation of gaseous matter into liquid. Hence if the once liquid substance of the Earth first solidified at the surface, the implication is that its once aeriform substance first liquified at the surface.

But we have no need to rest in analogy. On considering what must happen in a rotating gaseous spheroid having

currents moving as above described, we shall see that external condensation is a corollary. A nebulous mass, when it has arrived at this stage, will consist of an aeriform mixture of various matters: the heavier and more condensible matters being contained in the rarer or less condensible, in the same way that water is contained in air. And the inference must be, that at a certain stage, some of these denser matters will be precipitated in the shape of cloud.<sup>1</sup> Now, what are the laws of precipitation from gases? If a gas through which some other substance is diffused in a gaseous state, expands in consequence of the removal of pressure, it will, when the rarefaction and consequent cooling reach a certain point, begin to let fall the suspended substance. Conversely, if a gas, saturated even with some substance, is subject to increased pressure, and is allowed to retain the additional heat which that pressure generates; so far from letting fall what it contains, it will gain the power to take up more. See, then, the inference respecting condensation in a nebulous spheroid. The currents proceeding from the equator to the centre, subject to increasing pressure, and acquiring the heat due both to this increasing pressure and to arrested motion, will have no tendency to deposit their suspended substances, but rather the reverse: a formation of liquid matter at the centre of the mass will be impossible. Contrariwise, the gaseous currents moving from the centre to the poles and thence to the equator, expanding as they go, first from diminished pressure and afterwards from increased centrifugal force; and losing heat, not only by expansion, but by more rapid radiation; will have less and less power to retain the matter diffused through them. The earliest precipitation will take place in the region of extremest rarefaction; namely, about the equator. An equatorial belt of cloud will be first formed, and widening into a zone, will by-and-by begin to condense

<sup>1</sup> The reader will perhaps say that this process is the one described as having taken place early in the history of nebular evolution; and this is true. But the same actions will be repeated in media of different densities.

into liquid.<sup>1</sup> Gradually this liquid film will extend itself on each side the equator, and, encroaching on the two hemispheres, will eventually close over at the poles: thus producing a thin hollow globe, or rather spheroid, filled with gaseous matter. We do not mean that this condensation will take place at the very outermost surface; for probably, round the denser gases forming the principal mass, there will extend strata of gases too rare and too cool to be entangled in these processes. It is the surface of this inner spheroid of denser gases to which our reasoning points as the place of earliest condensation.

The internal circulation we have described, continuing, as it must, after the formation of this liquid film, there will still go on the radiation of heat, and the progressive aggregation. The film will thicken at the expense of the internal gaseous substances precipitated on it. As it thickens, as the globe contracts, and as the gravitative force augments, the pressure will increase; and the evolution and radiation of heat will go on more rapidly. Eventually, however, when the liquid shell becomes very thick, and the internal cavity relatively small, the obstacle put to the escape of heat by this thick liquid shell, with its slowly-circulating currents, will turn the scale: the temperature of the outer surface will begin to diminish, and a solid crust will form while the internal cavity is yet unobliterated.

“But what,” it may be asked, “will become of this gaseous nucleus when exposed to the enormous gravitative pressure of a shell some thousands of miles thick? How can aeriform matter withstand such a pressure?” Very readily. It has been proved that even when the heat generated by compression is allowed to escape, some gases remain uncondensable by any force we can produce. An unsuccessful attempt lately made at Vienna to liquify oxygen, clearly shows this enormous resistance. The steel piston employed was literally shortened by the pressure used; and yet the gas remained

<sup>1</sup> The formation of Saturn's rings is thus rendered comprehensible.

unliquified! If, then, the expansive force is thus immense when the heat evolved is dissipated, what must it be when that heat is in great measure detained; as in the case we are considering? Indeed, the experiments of M. Cagniard de Latour have shown that gases may, under pressure, acquire the density of liquids while retaining the aeriform state; provided the temperature continues extremely high. In such a case, every addition to the heat is an addition to the repulsive power of the atoms: the increased pressure itself generates an increased ability to resist; and this remains true to whatever extent the compression is carried. Indeed, it is a corollary from the persistence of force, that if, under increasing pressure, a gas retains all the heat evolved, its resisting force is *absolutely unlimited*. Hence, the internal planetary structure we have described, is as physically stable a one as that commonly assumed.

And now let us see how this hypothesis tallies with the facts. One inference from it must be, that large masses will progress towards final consolidation more slowly than small masses. Though a large concentrating spheroid will, from its superior aggregative force, generate heat more rapidly than a small one; yet, having, relatively to its surface, a much greater quantity of heat to get rid of, it will be longer than a small one in going through the changes we have described. Consequently, at a time when the smaller members of our Solar System have arrived at so advanced a stage of aggregation as almost to have obliterated their central cavities, and so reached high specific gravities; the larger members will still be at that stage in which the central cavities bear great ratios to the surrounding shells, and will therefore have low specific gravities. This contrast is just what we find. The small planets Mercury, Venus, the Earth, and Mars, differing from each other comparatively little in density as in size, are about four times as dense as Jupiter and Uranus, and seven times as dense as Saturn and Neptune—planets exceeding them in size as oranges exceed peas; and



they are four times as dense as the Sun, which in mass is nearly 5,000,000 times greater than the smallest of them. The obvious objection that this hypothesis does not explain the minor differences, serves but to introduce a further confirmation. It may be urged that Jupiter is of greater specific gravity than Saturn, though, considering his superior mass, his specific gravity should be less; and that still more anomalous is the case of the Sun, which, though containing a thousand times the matter that Jupiter does, is nearly of the same specific gravity. The solution of these difficulties lies in the modifying effects of centrifugal force. Had the various masses to be compared been all along in a state of rest, then the larger should have been uniformly the less dense. But during the concentrating process they have been rotating with various velocities. The consequent centrifugal force has in each case been in antagonism with gravitation; and, according to its amount, has hindered the concentration to a greater or less degree. The efficient aggregative force has in each case been the excess of the centripetal tendency over the centrifugal. Whence we may infer that wherever this excess has been the least, the consolidation must have been the most hindered, and the specific gravity will be the smallest. This, too, we find to be the fact. Saturn, at whose equator the centrifugal force is even now almost one-sixth of gravity, and who, by his numerous satellites, shows us how strong an antagonist to concentration it was in earlier stages of his evolution, is little more than half as dense as Jupiter, whose concentration has been hindered by a centrifugal force bearing a much smaller ratio to the centripetal. On the other hand, the Sun, whose latter stages of aggregation have met with comparatively little of this opposition, and whose atoms tend towards their common centre with a force ten times as great as that which Jupiter's atoms are subject to, has, notwithstanding his immense bulk, reached a specific gravity as great as that of Jupiter; and he has done this partly for the reason assigned, and partly because the process

of consolidation has been, and still is, actively going on, while that of Jupiter has long since almost ceased.

Before pointing out further harmonies let us meet an objection. Laplace, taking for data Jupiter's mass, diameter, and rate of rotation, calculated the degree of compression at the poles which his centrifugal force should produce, supposing his substance to be homogeneous; and finding that the calculated amount of oblateness was greater than the actual amount, inferred that his substance must be denser towards the centre. The inference seems unavoidable; is diametrically opposed to the hypothesis of a shell of denser matter with a gaseous nucleus; and we confess that on first meeting with this fact we were inclined to think it fatal. But there is a consideration, apt to be overlooked, which completely disposes of it. A compressed elastic medium tends ever with great energy to give a spherical figure to the chamber in which it is confined. This truth is alike mathematically demonstrable, and recognized in practice by every engineer. In the case before us, the expansive power of the gaseous nucleus is such as to balance the gravitation of the shell of the planet; and this power perpetually strives to make the planet a perfect sphere. Thus the tendency of the centrifugal force to produce oblateness, is opposed not only by the force of gravity but by another force of great intensity; and hence the degree of oblateness produced is relatively small.

This difficulty being, as we think, satisfactorily met, we go on to name some highly significant facts giving indirect support to our hypothesis. And first with respect to the asteroids, or planetoids, as they are otherwise called. Now that these have proved to be so numerous—now that it has become probable that beyond some sixty already discovered there are many more—the supposition of Olbers, that they are the fragments of an exploded planet which once occupied the vacant region they fill, has gained increased probability. The alternative supposition of Laplace, that they are the products of

a nebulous ring which separated into many fragments instead of collapsing into a single mass, seems inconsistent with the extremely various, and in some cases extremely great, inclinations of their orbits; as well as with their similarly various and great eccentricities. For these the theory of Olbers completely accounts—indeed, it necessarily involves them; while at the same time it affords us a feasible explanation of meteors, and especially the periodic swarms of them, which would else be inexplicable. The fact, inferred from the present derangement of their orbits, that if the planetoids once formed parts of one mass, it must have exploded myriads of years ago, is no difficulty, but rather the reverse. Taking Olbers' supposition, then, as the most tenable one, let us ask how such an explosion could have occurred. If planets are internally constituted as is commonly assumed, no conceivable cause of it can be named. A solid mass may crack and fall to pieces, but it cannot violently explode. So, too, with a liquid mass covered by a crust. Though, if contained in an unyielding shell and artificially raised to a very high temperature, a liquid might so expand as to burst the shell and simultaneously flash into vapour; yet, if contained in a yielding crust, like that of a planet, it would not do so: it would crack the crust and give off its expansive force gradually. But the planetary structure above supposed, supplies us with all the requisite conditions to an explosion, and an adequate cause for it. We have in the interior of the mass, a cavity serving as a sufficient reservoir of force. We have this cavity filled with gaseous matters of high tension. We have in the chemical affinities of these matters a source of enormous expansive power—power capable of being quite suddenly liberated. And we have in the increasing heat of the shell, consequent on progressing concentration, a cause of such instantaneous chemical change and the resulting explosion. The explanation thus supplied, of an event which there can be little doubt has occurred, and which is not otherwise accounted for, adds to the probability of the hypothesis.

One further evidence, and that not the least important, is deducible from geology. From the known rate at which the temperature rises as we pierce deeper into the substance of the Earth, it has been inferred that its solid crust is some forty miles thick. And if this be its thickness, we have a feasible explanation of volcanic phenomena, as well as of elevations and subsidences. But proceeding on the current supposition that the Earth's interior is wholly filled with molten matter, Prof. Hopkins has calculated that to cause the observed amount of precession of the equinoxes, the Earth's crust must be at least eight hundred miles thick. Here is an immense discrepancy. However imperfect may be the data from which it is calculated that the Earth is molten at forty miles deep, it seems very unlikely that this conclusion differs from the truth so widely as forty miles does from eight hundred. It seems scarcely conceivable that if the crust is thus thick, it should by its contraction and corrugation, produce mountain chains, as it has done during quite modern geologic epochs. It is not easy on this supposition to explain elevations and subsidences of small area. Neither do the phenomena of volcanoes appear comprehensible. Indeed to account for these, Prof. Hopkins has been obliged to make the gratuitous and extremely improbable assumption, that there are isolated lakes of molten matter enclosed in this thick crust, and situated, as they must be, not far from its outer surface. But irreconcilable as appear the astronomical with the geological facts, if we take for granted that the Earth consists wholly of solid and liquid substances, they become at once reconcilable if we adopt the conclusion that the Earth has a gaseous nucleus. If there is an internal cavity of considerable diameter occupied only by aeriform matter—if the density of the surrounding shell is, as it must in that case be, greater than the current supposition implies; then there will be a larger quantity of matter contained in the equatorial protuberance, and an adequate cause for the precession. Manifestly there may be found some proportion between the

central space and its envelope, which will satisfy the mechanical requirements, without involving a thicker crust than geological phenomena indicate.<sup>1</sup>

We conceive, then, that the hypothesis we have set forth, is in many respects preferable to that ordinarily received. We can know nothing by direct observation concerning the central parts either of our own planet or any other: indirect methods are alone possible. The idea which has been tacitly adopted, is just as speculative as that we have opposed to it; and the only question is, which harmonizes best with established facts. Thus compared, the advantage is greatly on the side of the new one. It disposes of sundry anomalies, and explains things that seem else incomprehensible. We are no longer obliged to assume such wide differences between the substances of the various planets: we need not think of any of them as like cork or water. We are shown how it happens that the larger planets have so much lower specific gravities than the smaller, instead of having higher ones, as might have been expected; and we are further shown why Saturn is the lightest of all. That Mercury is relatively so much heavier than the Sun; that Jupiter is specifically lighter than his smallest satellite; that Saturn's rings have a density one and a half times as great as Saturn; are no longer mysteries. A feasible cause is assigned for the catastrophe which produced the asteroids. And some apparently incongruous peculiarities in the Earth's structure are brought to an agreement. May we not say, then, that being deducible from the Nebular Hypothesis, this alleged planetary structure gives further indirect support to that hypothesis?

In considering the specific gravities of the heavenly bodies, we have been obliged to speak of the heat evolved by them. But we have yet to point out the fact that in their present conditions with respect to temperature, we find additional

<sup>1</sup> Since this was written, M. Poinsoot has shown that the precession would be the same whether the Earth were solid or hollow.

materials for building up our argument ; and these too of the most substantial character.

Heat must inevitably be generated by the aggregation of diffused matter into a concrete form ; and throughout our reasonings we have assumed that such generation of heat has been an accompaniment of nebular condensation. If, then, the Nebular Hypothesis be true, we ought to find in all the heavenly bodies, either present high temperature or marks of past high temperature.

As far as observation can reach, the facts prove to be what theory requires. Various evidences conspire to show that, below a certain depth, the Earth is still molten. And that it was once wholly molten, is implied by the circumstance that the rate at which the temperature increases on descending below its surface, is such as would be found in a mass that had been cooling for an indefinite period. The Moon, too, shows us, by its corrugations and its conspicuous volcanoes, that in it there has been a process of refrigeration and contraction, like that which had gone on in the Earth. And in Venus, the existence of mountains similarly indicates an igneous reaction of the interior upon a solidifying crust.

On the common theory of creation, these phenomena are inexplicable. To what end the Earth should once have existed in a molten state, incapable of supporting life, it cannot say. To satisfy this supposition, the Earth should have been originally created in a state fit for the assumed purposes of creation ; and similarly with the other planets. While, therefore, to the Nebular Hypothesis the evidence of original incandescence and still continued internal heat, furnish strong confirmation, they are, to the antagonist hypothesis, insurmountable difficulties.

But the argument from temperature does not end here. There remains to be noticed a more conspicuous and still more significant fact. If the Solar System was formed by the concentration of diffused matter, which evolved heat while gravitating into its present dense form ; then there are cer-

tain obvious corollaries respecting the relative temperatures of the resulting bodies. Other things equal, the latest-formed mass will be the latest in cooling—will, for an almost infinite time, possess a greater heat than the earlier-formed ones. Other things equal, the largest mass will, because of its superior aggregative force, become hotter than the others, and radiate more intensely. Other things equal, the largest mass, notwithstanding the higher temperature it reaches, will, in consequence of its relatively small surface, be the slowest in losing its evolved heat. And hence, if there is one mass which was not only formed after the rest, but exceeds them enormously in size, it follows that this one will reach an intensity of incandescence much beyond that reached by the rest; and will continue in a state of intense incandescence long after the rest have cooled. Such a mass we have in the Sun. It is a corollary from the Nebular Hypothesis, that the matter forming the Sun assumed its present concrete form, at a period much more recent than that at which the planets became definite bodies. The quantity of matter contained in the Sun is nearly five million times that contained in the smallest planet, and above a thousand times that contained in the largest. And while, from the enormous gravitative force of the atoms, the evolution of heat has been intense, the facilities of radiation have been relatively small. Hence the still-continued high temperature. Just that condition of the central body which is a necessary inference from the Nebular Hypothesis, we find actually existing in the Sun.

It may be well to consider a little more closely, what is the probable condition of the Sun's surface. Round the globe of incandescent molten substances, thus conceived to form the visible body of the Sun, there is known to exist a voluminous atmosphere: the inferior brilliancy of the Sun's border, and the appearances during a total eclipse, alike show this.<sup>1</sup> What now must be the constitution of this atmosphere? At a temperature approaching a thousand times that of molten

<sup>1</sup> See Herschel's "Outlines of Astronomy."

iron, which is the calculated temperature of the solar surface, very many, if not all, of the substances we know as solid, would become gaseous; and though the Sun's enormous attractive force must be a powerful check on this tendency to assume the form of vapour, yet it cannot be questioned that if the body of the Sun consists of molten substances, some of them must be constantly undergoing evaporation. That the dense gases thus continually being generated will form the entire mass of the solar atmosphere, is not probable. If anything is to be inferred, either from the Nebular Hypothesis, or from the analogies supplied by the planets, it must be concluded that the outermost part of the solar atmosphere consists of what are called permanent gases—gases that are not condensible into fluid even at low temperatures. If we consider what must have been the state of things here, when the surface of the Earth was molten, we shall see that round the still molten surface of the Sun, there probably exists a stratum of dense aeriform matter, made up of sublimed metals and metallic compounds, and above this a stratum of comparatively rare medium analogous to air. What now will happen with these two strata? Did they both consist of permanent gases, they could not remain separate: according to a well-known law, they would eventually form a homogeneous mixture. But this will by no means happen when the lower stratum consists of matters that are gaseous only at excessively high temperatures. Given off from a molten surface, ascending, expanding, and cooling, these will presently reach a limit of elevation above which they cannot exist as vapour, but must condense and precipitate. Meanwhile the upper stratum, habitually charged with its quantum of these denser matters, as our air with its quantum of water, and ready to deposit them on any depression of temperature, must be habitually unable to take up any more of the lower stratum; and therefore this lower stratum will remain quite distinct from it.

Since the foregoing paragraph was originally published, in



1858, the proposition it enunciates as a corollary from the Nebular Hypothesis, has been in great part verified. The marvellous disclosures made by spectrum-analysis, have proved beyond the possibility of doubt, that the solar atmosphere contains, in a gaseous state, the metals, iron, calcium, magnesium, sodium, chromium, and nickel, along with small quantities of barium, copper, and zinc. That there exist in the solar atmosphere other metals like those which we have on the Earth, is probable; and that it contains elements which are unknown to us, is very possible. Be this as it may, however, the proposition that the Sun's atmosphere consists largely of metallic vapours, must take rank as an established truth; and that the incandescent body of the Sun consists of molten metals, follows almost of necessity. That an *à priori* inference which probably seemed to many readers wildly speculative, should be thus conclusively justified by observations, made without reference to any theory, is a striking fact; and it gives yet further support to the hypothesis from which this *à priori* conclusion was drawn. It may be well to add that Kirchoff, to whom we owe this discovery respecting the constitution of the solar atmosphere, himself remarks in his memoir of 1861, that the facts disclosed are in harmony with the Nebular Hypothesis.

And here let us not omit to note also, the significant bearing which Kirchoff's results have on the doctrine contended for in a foregoing section. Leaving out the barium, copper, and zinc, of which the quantities are inferred to be small, the metals existing as vapours in the Sun's atmosphere, and by consequence as molten in his incandescent body, have an average specific gravity of 4.25. But the average specific gravity of the Sun is about 1. How is this discrepancy to be explained? To say that the Sun consists almost wholly of the three lighter metals named, would be quite unwarranted by the evidence: the results of spectrum-analysis would just as much warrant the assertion that the Sun consists almost wholly of the three heavier. Three metals (two

of them heavy) having been already left out of the estimate because their quantities appear to be small, the only legitimate assumption on which to base an estimate of specific gravity, is that the rest are present in something like equal amounts. Is it then that the lighter metals exist in larger proportions in the molten mass, though not in the atmosphere? This is very unlikely: the known habitudes of matter rather imply that the reverse is the case. Is it then that under the conditions of temperature and gravitation existing in the Sun, the state of liquid aggregation is wholly unlike that existing here? This is a very strong assumption: it is one for which our terrestrial experiences afford no adequate warrant; and if such unlikeness exists, it is very improbable that it should produce so immense a contrast in specific gravity as that of 4 to 1. The more legitimate conclusion is that the Sun's body is not made up of molten matter all through; but that it consists of a molten shell with a gaseous nucleus. And this we have seen to be a corollary from the Nebular Hypothesis.

Considered in their *ensemble*, the several groups of evidences assigned amount almost to proof. We have seen that, when critically examined, the speculations of late years current respecting the nature of the nebulae, commit their promulgators to sundry absurdities; while, on the other hand, we see that the various appearances these nebulae present, are explicable as different stages in the precipitation and aggregation of diffused matter. We find that comets, alike by their physical constitution, their immensely-elongated and variously-directed orbits, the distribution of those orbits, and their manifest structural relation to the Solar System, bear testimony to the past existence of that system in a nebulous form. Not only do those obvious peculiarities in the motions of the planets which first suggested the Nebular Hypothesis, supply proofs of it, but on closer examination we discover, in the slightly-diverging inclinations of their orbits, in their

various rates of rotation, and their differently-directed axes of rotation, that the planets yield us yet further testimony ; while the satellites, by sundry traits, and especially by their occurrence in greater or less abundance where the hypothesis implies greater or less abundance, confirm this testimony. By tracing out the process of planetary condensation, we are led to conclusions respecting the internal structure of planets which at once explain their anomalous specific gravities, and at the same time reconcile various seemingly contradictory facts. Once more, it turns out that what is *à priori* inferable from the Nebular Hypothesis respecting the temperatures of the resulting bodies, is just what observation establishes ; and that both the absolute and the relative temperatures of the Sun and planets are thus accounted for. When we contemplate these various evidences in their totality —when we observe that, by the Nebular Hypothesis, the leading phenomena of the Solar System, and the heavens in general, are explicable ; and when, on the other hand, we consider that the current cosmogony is not only without a single fact to stand on, but is at variance with all our positive knowledge of Nature ; we see that the proof becomes overwhelming.

It remains only to point out that while the genesis of the Solar System, and of countless other systems like it, is thus rendered comprehensible, the ultimate mystery continues as great as ever. The problem of existence is not solved : it is simply removed further back. The Nebular Hypothesis throws no light on the origin of diffused matter ; and diffused matter as much needs accounting for as concrete matter. The genesis of an atom is not easier to conceive than the genesis of a planet. Nay, indeed, so far from making the Universe a less mystery than before, it makes it a greater mystery. Creation by manufacture is a much lower thing than creation by evolution. A man can put together a machine ; but he cannot make a machine develop itself. The ingenious artizan, able as some have been, so far to imitate

vitality as to produce a mechanical pianoforte-player, may in some sort conceive how, by greater skill, a complete man might be artificially produced ; but he is unable to conceive how such a complex organism gradually arises out of a minute structureless germ. That our harmonious universe once existed potentially as formless diffused matter, and has slowly grown into its present organized state, is a far more astonishing fact than would have been its formation after the artificial method vulgarly supposed. Those who hold it legitimate to argue from phenomena to noumena, may rightly contend that the Nebular Hypothesis implies a First Cause as much transcending "the mechanical God of Paley," as this does the fetish of the savage.

ILLOGICAL GEOLOGY.

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THAT proclivity to generalization which is possessed in greater or less degree by all minds, and without which, indeed, intelligence cannot exist, has unavoidable inconveniences. Through it alone can truth be reached ; and yet it almost inevitably betrays into error. But for the tendency to predicate of every other case, that which has been found in the observed cases, there could be no rational thinking ; and yet by this indispensable tendency, men are perpetually led to found, on limited experience, propositions which they wrongly assume to be universal or absolute. In one sense, however, this can scarcely be regarded as an evil ; for without premature generalizations the true generalization would never be arrived at. If we waited till all the facts were accumulated before trying to formulate them, the vast unorganized mass would be unmanageable. Only by provisional grouping can they be brought into such order as to be dealt with ; and this provisional grouping is but another name for premature generalization. How uniformly men follow this course, and how needful the errors are as steps to truth, is well illustrated in the history of Astronomy. The heavenly bodies move round the Earth in circles, said the earliest observers : led partly by the appearances, and partly by their experiences of central motions in terrestrial objects, with which, as all circular, they classed the celestial motions from lack of any alternative conception. Without this provisional belief, wrong as it was, there could not have been that comparison of positions which showed that the motions are not representable by circles ; and

which led to the hypothesis of epicycles and eccentrics. Only by the aid of this hypothesis, equally untrue, but capable of accounting more nearly for the appearances, and so of inducing more accurate observations—only thus did it become possible for Copernicus to show that the heliocentric theory is more feasible than the geocentric theory; or for Kepler to show that the planets move round the sun in ellipses. Yet again, without the aid of this approximate truth discovered by Kepler, Newton could not have established that general law from which it follows, that the motion of a heavenly body round its centre of gravity is not necessarily in an ellipse, but may be in any conic section. And lastly, it was only after the law of gravitation had been verified, that it became possible to determine the actual courses of planets, satellites, and comets; and to prove that, in consequence of perturbations, their orbits always deviate, more or less, from regular curves. Thus, there followed one another five provisional theories of the Solar System, before the sixth and absolutely true theory was reached. In which five provisional theories, each for a time held as final, we may trace both the tendency men have to leap from scanty data to wide generalizations, that are either untrue or but partially true; and the necessity there is for these transitional generalizations as steps to the final one.

In the progress of geological speculation, the same laws of thought are clearly displayed. We have dogmas that were more than half false, passing current for a time as universal truths. We have evidence collected in proof of these dogmas; by and by a colligation of facts in antagonism with them; and eventually a consequent modification. In conformity with this somewhat improved hypothesis, we have a better classification of facts; a greater power of arranging and interpreting the new facts now rapidly gathered together; and further resulting corrections of hypothesis. Being, as we are at present, in the midst of this process, it is not possible to give an adequate account of the development of geological

science as thus regarded : the earlier stages are alone known to us. Not only, however, is it interesting to observe how the more advanced views now received respecting the Earth's history, have been evolved out of the crude views which preceded them ; but we shall find it extremely instructive to observe this. We shall see how greatly the old ideas still sway, both the general mind, and the minds of geologists themselves. We shall see how the kind of evidence that has in part abolished these old ideas, is still daily accumulating, and threatens to make other like revolutions. In brief, we shall see whereabouts we are in the elaboration of a true theory of the Earth ; and, seeing our whereabouts, shall be the better able to judge, among various conflicting opinions, which best conform to the ascertained direction of geological discovery.

It is alike needless and impracticable here to enumerate the many speculations which were in earlier ages propounded by acute men—speculations some of which contained portions of truth. Falling in unfit times, these speculations did not germinate ; and hence do not concern us. We have nothing to do with ideas, however good, out of which no science grew ; but only with those which gave origin to the system of Geology that now exists. We therefore begin with Werner.

Taking for data the appearances of the Earth's crust in a narrow district of Germany ; observing the constant order of superposition of strata, and their respective physical characters ; Werner drew the inference that strata of like characters succeeded each other in like order over the entire surface of the Earth. And seeing, from the laminated structure of many formations and the organic remains contained in others, that they were sedimentary ; he further inferred that these universal strata had been in succession precipitated from a chaotic menstruum which once covered our planet. Thus, on a very incomplete acquaintance with a thousandth part of the Earth's crust, he based a sweeping generalization apply-

ing to the whole of it. This Neptunist hypothesis, mark, borne out though it seemed to be by the most conspicuous surrounding facts, was quite untenable if analyzed. That a universal chaotic menstruum should deposit, one after another, numerous sharply-defined strata, differing from each other in composition, is incomprehensible. That the strata so deposited should contain the remains of plants and animals, which could not have lived under the supposed conditions, is still more incomprehensible. Physically absurd, however, as was this hypothesis, it recognized, though under a distorted form, one of the great agencies of geological change—that of water. It served also to express the fact, that the formations of the Earth's crust stand in some kind of order. Further, it did a little towards supplying a nomenclature, without which much progress was impossible. Lastly, it furnished a standard with which successions of strata in various regions could be compared, the differences noted, and the actual sections tabulated. It was the first provisional generalization; and was useful, if not indispensable, as a step to truer ones.

Following this rude conception, which ascribed geological phenomena to one agency, acting during one primeval epoch, there came a greatly-improved conception, which ascribed them to two agencies, acting alternately during successive epochs. Hutton, perceiving that sedimentary deposits were still being formed at the bottom of the sea from the detritus carried down by rivers; perceiving, further, that the strata of which the visible surface chiefly consists, bore marks of having been similarly formed out of pre-existing land; and inferring that these strata could have become land only by upheaval after their deposit; concluded that throughout an indefinite past, there had been periodic convulsions, by which continents were raised, with intervening eras of repose, during which such continents were worn down and transformed into new marine strata, fated to be in their turns elevated above the surface of the ocean. And finding that igneous action, to which sundry earlier geologists had ascribed basaltic rocks,



was in countless places a source of disturbance, he taught that from it resulted these periodic convulsions. In this theory we see:—first, that the previously-recognized agency of water was conceived to act, not as by Werner, after a manner of which we have no experience, but after a manner daily displayed to us; and second, that the igneous agency, before considered only as a cause of special formations, was recognized as a universal agency, but assumed to act in an unproved way. Werner's sole process, Hutton developed from the catastrophic and inexplicable into the uniform and explicable; while that antagonistic second process, of which he first adequately estimated the importance, was regarded by him as a catastrophic one, and was not assimilated to known processes—not explained. We have here to note, however, that the facts collected and provisionally arranged in conformity with Werner's theory, served, after a time, to establish Hutton's more rational theory—in so far, at least, as aqueous formations are concerned; while the doctrine of periodic subterranean convulsions, crudely as it was conceived by Hutton, was a temporary generalization needful as a step towards the theory of igneous action.

Since Hutton's time, the development of geological thought has gone still further in the same direction. These early sweeping doctrines have received additional qualifications. It has been discovered that more numerous and more heterogeneous agencies have been at work, than was at first believed. The igneous hypothesis has been rationalized, as the aqueous one had previously been: the gratuitous assumption of vast elevations suddenly occurring after long intervals of quiescence, has grown into the consistent theory, that islands and continents are the accumulated results of successive small upheavals, like those experienced in ordinary earthquakes. To speak more specifically, we find, in the first place, that instead of assuming the denudation produced by rain and rivers to be the sole means of wearing down lands and producing their irregularities of surface, geologists now see that

denudation is only a part-cause of such irregularities ; and further, that the new strata deposited at the bottom of the sea, are not the products of river-sediment solely, but are in part due to the action of waves and tidal currents on the coasts. In the second place, we find that Hutton's conception of upheaval by subterranean forces, has not only been modified by assimilating these subterranean forces to ordinary earthquake-forces ; but modern inquiries have shown that, besides elevations of surface, subsidences are thus produced ; that local upheavals, as well as the general upheavals which raise continents, come within the same category ; and that all these changes are probably consequent on the progressive collapse of the Earth's crust upon its cooling and contracting nucleus—the only adequate cause. In the third place, we find that beyond these two great antagonist agencies, modern Geology recognizes sundry minor ones : as those of glaciers and ice-bergs ; those of coral-polypes ; those of *Protozoa* having siliceous or calcareous shells—each of which agencies, insignificant as it seems, is found capable of slowly working terrestrial changes of considerable magnitude. Thus, then, the recent progress of Geology has been a still further departure from primitive conceptions. Instead of one catastrophic cause, once in universal action, as supposed by Werner—instead of one general continuous cause, antagonized at long intervals by a catastrophic cause, as taught by Hutton ; we now recognize several causes, all more or less general and continuous. We no longer resort to hypothetical agencies to explain the phenomena displayed by the Earth's crust ; but we are day by day more clearly perceiving that these phenomena have arisen from forces like those now at work, which have acted in all varieties of combination, through immeasurable periods of time.

Having thus briefly traced the evolution of geologic science, and noted its present form, let us go on to observe the way in which it is still swayed by the crude hypotheses it set out

with ; so that even now, old doctrines that are abandoned as untenable in theory, continue in practice to mould the ideas of geologists, and to foster sundry beliefs that are logically indefensible. We shall see, both how those simple sweeping conceptions with which the science commenced, are those which every student is apt at first to seize hold of, and how several influences conspire to maintain the twist thus resulting—how the original nomenclature of periods and formations necessarily keeps alive the original implications ; and how the need for arranging new data in some order, naturally results in their being thrust into the old classification, unless their incongruity with it is very glaring. A few facts will best prepare the way for criticism.

Up to 1839 it was inferred, from their crystalline character, that the metamorphic rocks of Anglesea are more ancient than any rocks of the adjacent main land ; but it has since been shown that they are of the same age with the slates and grits of Carnarvon and Merioneth. Again, slaty cleavage having been first found only in the lowest rocks, was taken as an indication of the highest antiquity : whence resulted serious mistakes ; for this mineral characteristic is now known to occur in the Carboniferous system. Once more, certain red conglomerates and grits on the north-west coast of Scotland, long supposed from their lithological aspect to belong to the Old Red Sandstone, are now identified with the Lower Silurians. These are a few instances of the small trust to be placed in mineral qualities, as evidence of the ages or relative positions of strata. From the recently-published third edition of *Siluria*, may be culled numerous facts of like implication. Sir R. Murchison considers it ascertained, that the siliceous Stiper stones of Shropshire are the equivalents of the Tremadock slates of North Wales. Judged by their fossils, Bala slate and limestone are of the same age as the Caradoc sandstone, lying forty miles off. In Radnorshire, the formation classed as upper Llandovery rock, is described at different spots, as “sandstone or conglomerate,” “impure limestone,”

“hard coarse grits,” “siliceous grit”—a considerable variation for so small an area as that of a county. Certain sandy beds on the left bank of the Towy, which Sir R. Murchison had, in his *Silurian System*, classed as Caradoc sandstone (evidently from their mineral characters), he now finds, from their fossils, belong to the Llandeilo formation. Nevertheless, inferences from mineral characters are still habitually drawn and received. Though *Siluria*, in common with other geological works, supplies numerous proofs that rocks of the same age are often of widely-different composition a few miles off, while rocks of widely-different ages are often of similar composition; and though Sir R. Murchison shows us, as in the case just cited, that he has himself in past times been misled by trusting to lithological evidence; yet his reasoning, all through *Siluria*, shows that he still thinks it natural to expect formations of the same age to be chemically similar, even in remote regions. For example, in treating of the Silurian rocks of South Scotland, he says:—“When traversing the tract between Dumfries and Moffat in 1850, it occurred to me that the dull reddish or purple sandstone and schist to the north of the former town, which so resembled the bottom rocks of the Longmynd, Llanberis, and St. David’s, would prove to be of the same age;” and further on, he again insists upon the fact that these strata “are absolutely of the same composition as the bottom rocks of the Silurian region.” On this unity of mineral character it is, that this Scottish formation is concluded to be contemporaneous with the lowest formations in Wales; for the scanty paleontological evidence suffices neither for proof nor disproof. Now, had there been a continuity of like strata in like order between Wales and Scotland, there might have been little to criticize in this conclusion. But since Sir R. Murchison himself admits, that in Westmoreland and Cumberland, some members of the system “assume a lithological aspect different from what they maintain in the Silurian and Welsh region,” there seems no reason to expect mineralogical continuity in Scotland. Obviously,

therefore, the assumption that these Scottish formations are of the same age with the Longmynd of Shropshire, implies the latent belief that certain mineral characters indicate certain eras. Far more striking instances, however, of the influence of this latent belief remain to be given. Not in such comparatively near districts as the Scottish lowlands only, does Sir R. Murchison expect a repetition of the Longmynd strata; but in the Rhenish provinces, certain "quartzose flagstones and grits, like those of the Longmynd," are seemingly concluded to be of contemporaneous origin, because of their likeness. "Quartzites in roofing-slates with a greenish tinge that reminded us of the lower slates of Cumberland and Westmoreland," are evidently suspected to be of the same age. In Russia, he remarks that the carboniferous limestones "are overlaid along the western edge of the Ural chain by sandstones and grits, which occupy much the same place in the general series as the millstone grit of England;" and in calling this group, as he does, the "representative of the millstone grit," Sir R. Murchison clearly shows that he thinks likeness of mineral composition some evidence of equivalence in time, even at that great distance. Nay, on the flanks of the Andes and in the United States, such similarities are looked for, and considered as significant of certain ages. Not that Sir R. Murchison contends theoretically for this relation between lithological character and date. For on the page from which we have just quoted (*Siluria*, p. 387), he says, that "whilst the soft Lower Silurian clays and sands of St. Petersburg have their equivalents in the hard schists and quartz rocks with gold veins in the heart of the Ural mountains, the equally soft red and green Devonian marls of the Valdai Hills are represented on the western flank of that chain by hard, contorted, and fractured limestones." But these, and other such admissions, seem to go for little. While himself asserting that the Potsdam-sandstone of North America, the Lingula-flags of England, and the alum-slates of Scandinavia are of the same period—while fully aware that among the Silurian

formations of Wales, there are oolitic strata like those of secondary age ; yet is his reasoning more or less coloured by the assumption, that formations of like qualities probably belong to the same era. Is it not manifest, then, that the exploded hypothesis of Werner continues to influence geological speculation ?

“But,” it will perhaps be said, “though individual strata are not continuous over large areas, yet systems of strata are. Though within a few miles the same bed gradually passes from clay into sand, or thins out and disappears, yet the group of strata to which it belongs does not do so ; but maintains in remote regions the same relations to other groups.”

This is the generally-current belief. On this assumption the received geological classifications appear to be framed. The Silurian system, the Devonian system, the Carboniferous system, etc., are set down in our books as groups of formations which everywhere succeed each other in a given order ; and are severally everywhere of the same age. Though it may not be asserted that these successive systems are universal ; yet it seems to be tacitly assumed that they are so. In North and South America, in Asia, in Australia, sets of strata are assimilated to one or other of these groups ; and their possession of certain mineral characters and a certain order of superposition are among the reasons assigned for so assimilating them. Though, probably, no competent geologist would contend that the European classification of strata is applicable to the globe as a whole ; yet most, if not all geologists, write as though it were so. Among readers of works on Geology, nine out of ten carry away the impression that the divisions, Primary, Secondary and Tertiary, are of absolute and uniform application ; that these great divisions are separable into subdivisions, each of which is definitely distinguishable from the rest, and is everywhere recognizable by its characters as such or such ; and that in all parts of the Earth, these minor systems severally began and ended at

the same time. When they meet with the term "carboniferous era," they take for granted that it was an era universally carboniferous—that it was, what Hugh Miller indeed actually describes it, an era when the Earth bore a vegetation far more luxuriant than it has since done; and were they in any of our colonies to meet with a coal-bed, they would conclude that, as a matter of course, it was of the same age as the English coal-beds.

Now this belief that geologic "systems" are universal, is quite as untenable as the other. It is just as absurd when considered *à priori*; and it is equally inconsistent with the facts. Though some series of strata classed together as Oolite, may range over a wider district than any one stratum of the series; yet we have but to ask what were the circumstances of its deposit, to see that the Oolitic series, like one of its individual strata, must be of local origin; and that there is not likely to be anywhere else, a series that exactly corresponds, either in its characters or in its commencement and termination. For the formation of such a series implies an area of subsidence, in which its component beds were thrown down. Every area of subsidence is necessarily limited; and to suppose that there exist elsewhere groups of beds completely answering to those known as Oolite, is to suppose that, in contemporaneous areas of subsidence, like processes were going on. There is no reason to suppose this; but every reason to suppose the reverse. That in contemporaneous areas of subsidence throughout the globe, the conditions would cause the formation of Oolite, or anything like it, is an assumption which no modern geologist would openly make: he would say that the equivalent series of beds found elsewhere, would very likely be of dissimilar mineral character. Moreover, in these contemporaneous areas of subsidence, the phenomena going on would not only be more or less different in kind; but in no two cases would they be likely to agree in their commencements and terminations. The probabilities are greatly against separate portions of the Earth's surface be-

ginning to subside at the same time, and ceasing to subside at the same time—a coincidence which alone could produce equivalent groups of strata. Subsidences in different places begin and end with utter irregularity; and hence the groups of strata thrown down in them can but rarely correspond. Measured against each other in time, their limits will disagree. They will refuse to fit into any scheme of definite divisions. On turning to the evidence, we find that it daily tends more and more to justify these *à priori* positions. Take, as an example, the Old Red Sandstone system. In the north of England this is represented by a single stratum of conglomerate. In Herefordshire, Worcestershire, and Shropshire, it expands into a series of strata from eight to ten thousand feet thick, made up of conglomerates, red, green, and white sandstones, red, green, and spotted marls, and concretionary limestones. To the south-west, as between Caermarthen and Pembroke, these Old Red Sandstone strata exhibit considerable lithological changes; and there is an absence of fossil fishes. On the other side of the Bristol Channel, they display further changes in mineral characters and remains. While in South Devon and Cornwall, the equivalent strata, consisting chiefly of slates, schists, and limestones, are so wholly different, that they were for a long time classed as Silurian. When we thus see that in certain directions the whole group of deposits thins out, and that its mineral characters as well as its fossils change within moderate distances; does it not become clear that the whole group of deposits was a local one? And when we find, in other regions, formations analogous to these Old Red Sandstone or Devonian formations, is it certain—is it even probable—that they severally began and ended at the same time with them? Should it not require overwhelming evidence to make us believe as much?

Yet so strongly is geological speculation swayed by the tendency to regard the phenomena as general instead of local, that even those most on their guard against it seem unable



to escape its influence. At page 158 of his *Principles of Geology*, Sir Charles Lyell says :—

“A group of red marl and red sandstone, containing salt and gypsum, being interposed in England between the Lias and the Coal, all other red marls and sandstones, associated some of them with salt, and others with gypsum, and occurring not only in different parts of Europe, but in North America, Peru, India, the salt deserts of Asia, those of Africa—in a word, in every quarter of the globe, were referred to one and the same period. . . . It was in vain to urge as an objection the improbability of the hypothesis which implies that all the moving waters on the globe were once simultaneously charged with sediment of a red colour. But the rashness of pretending to identify, in age, all the red sandstones and marls in question, has at length been sufficiently exposed, by the discovery that, even in Europe, they belong decidedly to many different epochs.”

Nevertheless, while in this and numerous passages of like implication, Sir C. Lyell protests against the bias here illustrated, he seems himself not completely free from it. Though he utterly rejects the old hypothesis that all over the Earth the same continuous strata lie upon each other in regular order, like the coats of an onion, he still writes as though geologic “systems” do thus succeed each other. A reader of his *Manual* would certainly suppose him to believe, that the Primary epoch ended, and the Secondary epoch commenced, all over the world at the same time—that these terms really correspond to distinct universal eras in Nature. When he assumes, as he does, that the division between Cambrian and Lower Silurian in America, answers chronologically to the division between Cambrian and Lower Silurian in Wales—when he takes for granted that the partings of Lower from Middle Silurian, and of Middle Silurian from Upper, in the one region, are of the same dates as the like partings in the other region; does it not seem that he believes geologic “systems” to be universal, in the sense that their separations were in all places contemporaneous? Though he would, doubtless, disown this as an article of faith, is not his thinking unconsciously influenced by it? Must we not

say that though the onion-coat hypothesis is dead, its spirit is traceable, under a transcendental form, even in the conclusions of its antagonists ?

Let us now consider another leading geological doctrine, introduced to us by the cases just mentioned. We mean the doctrine that strata of the same age contain like fossils ; and that, therefore, the age and relative position of any stratum may be known by its fossils. While the theory that strata of like mineral characters were everywhere deposited simultaneously, has been ostensibly abandoned, there has been accepted the theory that in each geologic epoch similar plants and animals existed everywhere ; and that, therefore, the epoch to which any formation belongs may be known by the organic remains contained in the formation. Though, perhaps, no leading geologist would openly commit himself to an unqualified assertion of this theory, yet it is tacitly assumed in current geological reasoning.

This theory, however, is scarcely more tenable than the other. It cannot be concluded with any certainty, that formations in which similar organic remains are found, were of contemporaneous origin ; nor can it be safely concluded that strata containing different organic remains are of different ages. To most readers these will be startling propositions ; but they are fully admitted by the highest authorities. Sir Charles Lyell confesses that the test of organic remains must be used "under very much the same restrictions as the test of mineral composition." Sir Henry de la Beche, who variously illustrates this truth, gives, as one instance, the great incongruity there must be between the fossils of our carboniferous rocks and those of the marine strata deposited at the same period. But though, in the abstract, the danger of basing positive conclusions on evidence derived from fossils, is clearly recognized ; yet, in the concrete, this danger is generally disregarded. The established conclusions respecting the ages of strata, take but little note of it ; and by

some geologists it seems altogether ignored. Throughout his *Siluria*, Sir R. Murchison habitually assumes that the same, or kindred, species, lived in all parts of the Earth at the same time. In Russia, in Bohemia, in the United States, in South America, strata are classed as belonging to this or that part of the Silurian system, because of the similar fossils contained in them—are concluded to be everywhere contemporaneous if they enclose a proportion of identical or allied forms. In Russia the relative position of a stratum is inferred from the fact that, along with some Wenlock forms, it yields the *Pentamerus oblongus*. Certain crustaceans called Eurypteri, being characteristic of the Upper Ludlow rock, it is remarked that “large Eurypteri occur in a so-called black grey-wacke slate in Westmoreland, in Oneida County, New York, which will probably be found to be on the parallel of the Upper Ludlow rock :” in which word “probably,” we see both how dominant is this belief of universal distribution of similar creatures at the same period, and how apt this belief is to make its own proof, by raising the expectation that the ages are identical when the forms are alike. Besides thus interpreting the formations of Russia, England, and America, Sir R. Murchison thus interprets those of the antipodes. Fossils from Victoria Colony, he agrees with the Government-surveyor in classing as of Lower Silurian or Llandovery age : that is, he takes for granted that when certain crustaceans and mollusks were living in Wales, certain similar crustaceans and mollusks were living in Australia. Yet the improbability of this assumption may be readily shown from Sir R. Murchison’s own facts. If, as he points out, the crustacean fossils of the uppermost Silurian rocks in Lanarkshire are, “with one doubtful exception,” “all distinct from any of the forms known on the same horizon in England ;” how can it be fairly presumed that the forms existing on the other side of the Earth during the Silurian period, were nearly allied to those existing here? Not only, indeed, do Sir R. Murchison’s conclusions tacitly assume this doctrine of

universal distribution, but he distinctly enunciates it. "The mere presence of a graptolite," he says, "will at once decide that the enclosing rock is Silurian;" and he says this, notwithstanding repeated warnings against such generalizations. During the progress of Geology, it has over and over again happened that a particular fossil, long considered characteristic of a particular formation, has been afterwards discovered in other formations. Until some twelve years ago, *Goniatites* had not been found lower than the Devonian rocks; but now, in Bohemia, they have been found in rocks classed as Silurian. Quite recently, the *Orthoceras*, previously supposed to be a type exclusively palaeozoic, has been detected along with mesozoic *Ammonites* and *Belemnites*. Yet hosts of such experiences fail to extinguish the assumption, that the age of a stratum may be determined by the occurrence in it of a single fossil form. Nay, this assumption survives evidence of even a still more destructive kind. Referring to the Silurian system in Western Ireland, Sir R. Murchison says, "in the beds near Maam, Professor Nicol and myself collected remains, some of which would be considered Lower, and others Upper, Silurian;" and he then names sundry fossils which, in England, belong to the summit of the Ludlow rocks, or highest Silurian strata; "some, which elsewhere are known only in rocks of Llandovery age," that is, of middle Silurian age; and some, only before known in Lower Silurian strata, not far above the most ancient fossiliferous beds. Now what do these facts prove? Clearly, they prove that species which in Wales are separated by strata more than twenty thousand feet deep, and therefore seem to belong to periods far more remote from each other, were really co-existent. They prove that the mollusks and crinoids held characteristic of early Silurian strata, and supposed to have become extinct long before the mollusks and crinoids of the later Silurian strata came into existence, were really flourishing at the same time with these last; and that these last possibly date back to as early a period as the first. They

prove that not only the mineral characters of sedimentary formations, but also the collections of organic forms they contain, depend, to a great extent, on local circumstances. They prove that the fossils met with in any series of strata, cannot be taken as representing anything like the whole Flora and Fauna of the period they belong to. In brief, they throw great doubt upon numerous geological generalizations.

Notwithstanding facts like these, and notwithstanding his avowed opinion that the test of organic remains must be used "under very much the same restrictions as the test of mineral composition," Sir Charles Lyell, too, bases positive conclusions on this test: even where the community of fossils is slight and the distance great. Having decided that in various places in Europe, middle Eocene strata are distinguished by nummulites; he infers, without any other assigned evidence, that wherever nummulites are found—in Morocco, Algeria, Egypt, in Persia, Scinde, Cutch, Eastern Bengal, and the frontiers of China—the containing formation is middle Eocene. And from this inference he draws the following important corollary:—

"When we have once arrived at the conviction that the nummulitic formation occupies a middle place in the Eocene series, we are struck with the comparatively modern date to which some of the greatest revolutions in the physical geography of Europe, Asia, and northern Africa must be referred. All the mountain chains, such as the Alps, Pyrenees, Carpathians, and Himalayas, into the composition of whose central and loftiest parts the nummulitic strata enter bodily, could have had no existence till after the middle Eocene period."—*Manual*, p. 232.

A still more marked case follows on the next page. Because a certain bed at Claiborne in Alabama, which contains "four hundred species of marine shells," includes among them the *Cardita planicosta*, "and some others identical with European species, or very nearly allied to them," Sir C. Lyell says it is "highly probable the Claiborne beds agree in age with the central or Bracklesham group of England." When we find

contemporaneity supposed on the strength of a community no greater than that which sometimes exists between strata of widely-different ages in the same country, it seems very much as though the above-quoted caution had been forgotten. It appears to be assumed for the occasion, that species which had a wide range in space had a narrow range in time; which is the reverse of the fact. The tendency to systematize overrides the evidence, and thrusts Nature into a formula too rigid to fit her endless variety.

“But,” it may be urged, “surely, when in different places the order of superposition, the mineral characters, and the fossils, agree, it may be safely concluded that the formations thus corresponding are equivalents in time. If, for example, the United States displays the same succession of Silurian, Devonian, and Carboniferous systems, lithologically similar, and characterized by like fossils, it is a fair inference that these groups of strata were severally deposited in America at the same periods that they were deposited here.”

On this position, which seems a strong one, we have, in the first place, to remark, that the evidence of correspondence is always more or less suspicious. We have already adverted to the several “idols”—if we may use Bacon’s metaphor—to which geologists unconsciously sacrifice, when interpreting the structures of unexplored regions. Carrying with them the classification of strata existing in Europe, and assuming that groups of strata in other parts of the world must answer to some of the groups of strata known here, they are necessarily prone to assert parallelism on insufficient evidence. They scarcely entertain the previous question, whether the formations they are examining have or have not any European equivalents; but the question is—with which of the European series shall they be classed?—with which do they most agree?—from which do they differ least? And this being the mode of enquiry, there is apt to result great laxity of interpretation. How lax the interpretation really is, may be readily shown. When strata are discontinuous, as between

Europe and America, no evidence can be derived from the order of superposition, apart from mineral characters and organic remains; for, unless strata can be continuously traced, mineral characters and organic remains are the only means of classing them as such or such. As to the test of mineral characters, we have seen that it is almost worthless; and no modern geologist would dare to say it should be relied on. If the Old Red Sandstone series in mid-England, differs wholly in lithological aspect from the equivalent series in South Devon, it is clear that similarities of texture and composition can have no weight in assimilating a system of strata in another quarter of the globe to some European system. The test of fossils, therefore, is the only one that remains; and with how little strictness this test is applied, one case will show. Of forty-six species of British Devonian corals, only six occur in America; and this, notwithstanding the wide range which the Anthozoa are known to have. Similarly of the Mollusca and Crinoidea, it appears that, while there are sundry genera found in America that are found here, there are scarcely any of the same species. And Sir Charles Lyell admits that "the difficulty of deciding on the exact parallelism of the New York subdivisions, as above enumerated, with the members of the European Devonian, is very great, so few are the species in common." Yet it is on the strength of community of fossils, that the whole Devonian series of the United States is assumed to be contemporaneous with the whole Devonian series of England. And it is partly on the ground that the Devonian of the United States corresponds in time with our Devonian, that Sir Charles Lyell concludes the superjacent coal-measures of the two countries to be of the same age. Is it not, then, as we said, that the evidence in these cases is very suspicious? Should it be replied, as it may fairly be, that this correspondence from which the synchronism of distant formations is inferred, is not a correspondence between particular species or particular genera, but between the general characters of the contained

assemblages of fossils—between the *facies* of the two Faunas ; the rejoinder is, that though such correspondence is a stronger evidence of synchronism it is still an insufficient one. To infer synchronism from such correspondence, involves the postulate that throughout each geologic era there has habitually existed a recognizable similarity between the groups of organic forms inhabiting all the different parts of the Earth ; and that the causes which have in one part of the Earth changed the organic forms into those which characterize the next era, have simultaneously acted in all other parts of the Earth, in such ways as to produce parallel changes of their organic forms. Now this is not only a large assumption to make ; but it is an assumption contrary to probability. The probability is, that the causes which have changed Faunas have been local rather than universal ; that hence while the Faunas of some regions have been rapidly changing, those of others have been almost quiescent ; and that when such others have been changed, it has been, not in such ways as to maintain parallelism, but in such ways as to produce divergence.

Even supposing, however, that districts some hundreds of miles apart, furnished groups of strata that completely agreed in their order of superposition, their mineral characters, and their fossils, we should still have inadequate proof of contemporaneity. For there are conditions, very likely to occur, under which such groups might differ widely in age. If there be a continent of which the strata crop out on the surface obliquely to the line of coast—running, say, west-north-west, while the coast runs east and west—it is clear that each group of strata will crop out on the beach at a particular part of the coast ; that further west the next group of strata will crop out on the beach ; and so continuously. As the localization of marine plants and animals, is in a considerable degree determined by the nature of the rocks and their detritus, it follows that each part of this coast will have its more or less distinct Flora and Fauna. What now must result from the



action of the waves in the course of a geologic epoch? As the sea makes slow inroads on the land, the place at which each group of strata crops out on the beach will gradually move towards the west : its distinctive fish, mollusks, crustaceans, and sea-weeds, migrating with it. Further, the detritus of each of these groups of strata will, as the point of outcrop moves westwards, be deposited over the detritus of the group in advance of it. And the consequence of these actions, carried on for one of those enormous periods required for geologic changes, will be that, corresponding to each eastern stratum, there will arise a stratum far to the west, which, though occupying the same position relatively to other beds, formed of like materials, and containing like fossils, will yet be perhaps a million years later in date.

But the illegitimacy, or at any rate the great doubtfulness, of many current geological inferences, is best seen when we contemplate terrestrial changes now going on ; and ask how far such inferences are countenanced by them. If we carry out rigorously the modern method of interpreting geological phenomena, which Sir Charles Lyell has done so much to establish—that of referring them to causes like those at present in action—we cannot fail to see how improbable are sundry of the received conclusions.

Along each line of shore that is being worn away by the waves, there are being formed mud, sand, and pebbles. This detritus, spread over the neighbouring sea-bottom, has, in each locality, a more or less special character ; determined by the nature of the strata destroyed. In the English Channel it is not the same as in the Irish Channel ; on the east coast of Ireland it is not the same as on the west coast ; and so throughout. At the mouth of each great river, there is being deposited sediment differing more or less from that of other rivers in colour and quality ; forming strata that are here red, there yellow, and elsewhere brown, grey, or dirty white. Besides which various formations, going on in deltas and

along shores, there are some much wider and still more contrasted formations. At the bottom of the Ægæan Sea, there is accumulating a bed of Pteropod shells, which will eventually, no doubt, become a calcareous rock. For some hundreds of thousands of square miles, the ocean-bed between Great Britain and North America, is being covered with a stratum of chalk; and over large areas in the Pacific, there are going on deposits of coralline limestone. Thus, throughout the Earth, there are at this moment being produced an immense number of strata differing from each other in lithological characters. Name at random any one part of the seabottom, and ask whether the deposit there taking place is like the deposit taking place at some distant part of the seabottom, and the almost-certainly correct answer will be—No. The chances are not in favour of similarity, but very greatly against it.

In the order of superposition of strata there is occurring a like variety. Each region of the Earth's surface has its special history of elevations, subsidences, periods of rest; and this history in no case fits chronologically with the history of any other portion. River deltas are now being thrown down on formations of quite different ages. While here there has been deposited a series of beds many hundreds of feet thick, there has elsewhere been deposited but a single bed of fine mud. While one region of the Earth's crust, continuing for a vast epoch above the surface of the ocean, bears record of no changes save those resulting from denudation; another region of the Earth's crust gives proof of various changes of level, with their several resulting masses of stratified detritus. If anything is to be judged from current processes, we must infer, not only that everywhere the succession of sedimentary formations differs more or less from the succession elsewhere; but also that in each place, there exist groups of strata to which many other places have no equivalents.

With respect to the organic bodies imbedded in formations now in progress, the like truth is equally manifest, if not

more manifest. Even along the same coast, within moderate distances, the forms of life differ very considerably; much more on coasts that are remote from each other. Again, dissimilar creatures that are living together near the same shore, do not leave their remains in the same beds of sediment. For instance, at the bottom of the Adriatic, where the prevailing currents cause the deposits to be here of mud, and there of calcareous matter, it is proved that different species of co-existing shells are being buried in these respective formations. On our own coasts, the marine remains found a few miles from shore, in banks where fish congregate, are different from those found close to the shore, where only littoral species flourish. A large proportion of aquatic creatures have structures that do not admit of fossilization; while of the rest, the great majority are destroyed, when dead, by the various kinds of scavengers that creep among the rocks and weeds. So that no one deposit near our shores can contain anything like a true representation of the Fauna of the surrounding sea; much less of the co-existing Faunas of other seas in the same latitude; and still less of the Faunas of seas in distant latitudes. Were it not that the assertion seems needful, it would be almost absurd to say, that the organic remains now being buried in the Dogger Bank, can tell us next to nothing about the fish, crustaceans, mollusks, and corals that are being buried in the Bay of Bengal. Still stronger is the argument in the case of terrestrial life. With more numerous and greater contrasts between the plants and animals of remote places, there is a far more imperfect registry of them. Schouw marks out on the Earth more than twenty botanical regions, occupied by groups of forms so far distinct from each other, that, if fossilized, geologists would scarcely be disposed to refer them all to the same period. Of Faunas, the Arctic differs from the Temperate; the Temperate from the Tropical; and the South Temperate from the North Temperate. Nay, in the South Temperate Zone itself, the two regions of South Africa and South America are unlike in their mammals,

birds, reptiles, fishes, mollusks, insects. The shells and bones now lying at the bottoms of lakes and estuaries in these several regions, have certainly not that similarity which is usually looked for in those of contemporaneous strata ; and the recent forms exhumed in any one of these regions would very untruly represent the present Flora and Fauna of the Earth. In conformity with the current style of geological reasoning, an exhaustive examination of deposits in the Arctic circle, might be held to prove that though at this period there were sundry mammals existing, there were no reptiles ; while the absence of mammals in the deposits of the Galapagos Archipelago, where there are plenty of reptiles, might be held to prove the reverse. And at the same time, from the formations extending for two thousand miles along the great barrier-reef of Australia—formations in which are imbedded nothing but corals, echinoderms, mollusks, crustaceans, and fish, along with an occasional turtle, or bird, or cetacean, it might be inferred that there lived in our epoch neither terrestrial reptiles, nor terrestrial mammals. The mention of Australia, indeed, suggests an illustration which, even alone, would amply prove our case. The Fauna of this region differs widely from any that is found elsewhere. On land all the indigenous mammals, except bats, belong to the lowest, or implacental division ; and the insects are singularly different from those found elsewhere. The surrounding seas contain numerous forms that are more or less strange ; and among the fish there exists a species of shark, which is the only living representative of a genus that flourished in early geologic epochs. If, now, the modern fossiliferous deposits of Australia were to be examined by one ignorant of the existing Australian Fauna ; and if he were to reason in the usual manner ; he would be very unlikely to class these deposits with those of the present time. How, then, can we place confidence in the tacit assumption that certain formations in remote parts of the Earth are referable to the same period, because the organic remains contained in them display a

certain community of character? or that certain others are referable to different periods, because the *facies* of their Faunas are different?

“But,” it will be replied, “in past eras the same, or similar, organic forms were more widely distributed than now.” It may be so; but the evidence adduced by no means proves it. The argument by which this conclusion is reached, runs a risk of being quoted as an example of reasoning in a circle. As already pointed out, between formations in remote regions there is no means of ascertaining equivalence but by fossils. If, then, the contemporaneity of remote formations is concluded from the likeness of their fossils; how can it be said that similar plants and animals were once more widely distributed, because they are found in contemporaneous strata in remote regions? Is not the fallacy manifest? Even supposing there were no such fatal objection as this, the evidence commonly assigned would still be insufficient. For we must bear in mind that the community of organic remains commonly thought sufficient for inferring correspondence in time, is a very imperfect community. When the compared sedimentary beds are far apart, it is scarcely expected that there will be many species common to the two: it is enough if there be discovered a considerable number of common genera. Now had it been proved that, throughout geologic time, each genus lived but for a short period—a period measured by a single group of strata—something might be inferred. But what if we learn that many of the same genera continued to exist throughout enormous epochs, measured by several vast systems of strata? “Among molluscs, the genera *Avicula*, *Modiola*, *Terebratula*, *Lingula*, and *Orbicula*, are found from the Silurian rocks upwards to the present day.” If, then, between the lowest fossiliferous formations and the most recent, there exists this degree of community; must we not infer that there will probably often exist a great degree of community between strata that are far from contemporaneous?

Thus the reasoning from which it is concluded that similar organic forms were once more widely spread, is doubly fallacious; and, consequently, the classifications of foreign strata based on this conclusion are untrustworthy. Judging from the present distribution of life, we can scarcely expect to find similar remains in geographically remote strata of the same age; and where, between the fossils of geographically remote strata, we do find much similarity, it is probably often due rather to likeness of conditions than to contemporaneity. If from causes and effects such as we now witness, we reason back to the causes and effects of past epochs, we discover inadequate warrant for sundry of the received doctrines. Seeing, as we do, that in large areas of the Pacific this is a period characterized by abundance of corals; that in the North Atlantic it is a period in which a great chalk-deposit is being formed; and that in the valley of the Mississippi it is a period of new coal-basins—seeing also, as we do, that in one extensive continent this is peculiarly an era of implacental mammals, and that in another extensive continent it is peculiarly an era of placental mammals; we have good reason to hesitate before accepting these sweeping generalizations which are based on a cursory examination of strata occupying but a tenth part of the Earth's surface.

At the outset, this article was to have been a review of the works of Hugh Miller; but it has grown into something much more general. Nevertheless, the remaining two doctrines which we propose to criticize, may be conveniently treated in connection with his name, as that of one who fully committed himself to them. And first, a few words with regard to his position.

That he was a man whose life was one of meritorious achievement, every one knows. That he was a diligent and successful working geologist, scarcely needs saying. That with indomitable perseverance he struggled up from obscurity to a place in the world of literature and science, shows him

to have been highly endowed in character and intelligence. And that he had a remarkable power of presenting his facts and arguments in an attractive form, a glance at any of his books will quickly prove. By all means, let us respect him as a man of activity and sagacity, joined with a large amount of poetry. But while saying this we must add, that his reputation stands by no means so high in the scientific world as in the world at large. Partly from the fact that our Scotch neighbours are in the habit of blowing the trumpet rather loudly before their notabilities—partly because the charming style in which his books are written has gained him a large circle of readers—partly, perhaps, through a praiseworthy sympathy with him as a self-made man; Hugh Miller has met with an amount of applause which, little as we wish to diminish it, must not be allowed to blind the public to his defects as a man of science. The truth is, he was so far committed to a foregone conclusion, that he could not become a philosophical geologist. He might be aptly described as a theologian studying geology. The dominant idea with which he wrote, may be seen in the titles of his books—*Law versus Miracle*,—*Footprints of the Creator*,—*The Testimony of the Rocks*. Regarding geological facts as evidence for or against certain religious conclusions, it was scarcely possible for him to deal with geological facts impartially. His ruling aim was to disprove the Development Hypothesis, the assumed implications of which were repugnant to him; and in proportion to the strength of his feeling, was the one-sidedness of his reasoning. He admitted that “God might as certainly have *originated* the species by a law of development, as he *maintains* it by a law of development; the existence of a First Great Cause is as perfectly compatible with the one scheme as with the other.” Nevertheless, he considered the hypothesis at variance with Christianity; and therefore combated with it. He apparently overlooked the fact, that the doctrines of geology in general, as held by himself, had been rejected by many on similar grounds;

and that he had himself been repeatedly attacked for his anti-Christian teachings. He seems not to have perceived that, just as his antagonists were wrong in condemning as irreligious, theories which he saw were not irreligious; so might he be wrong in condemning, on like grounds, the Theory of Evolution. In brief, he fell short of that highest faith, which knows that all truths must harmonize; and which is, therefore, content trustfully to follow the evidence whithersoever it leads.

Of course it is impossible to criticize his works without entering on this great question to which he chiefly devoted himself. The two remaining doctrines to be here discussed, bear directly on this question; and, as above said, we propose to treat them in connection with Hugh Miller's name, because, throughout his reasonings, he assumes their truth. Let it not be supposed, however, that we shall aim to prove what he has aimed to disprove. While we purpose showing that his arguments against the Development Hypothesis are based on invalid assumptions; we do not purpose showing that the opposing arguments are based on valid assumptions. We hope to make it apparent that the geological evidence at present obtained, is insufficient for either side; further, that there seems little probability of sufficient evidence ever being obtained; and that if the question is eventually decided, it must be decided on other than geological data.

The first of the current doctrines to which we have just referred, is, that there occur in the records of former life on our planet, certain great blanks—that though, generally, the succession of fossil forms is tolerably continuous, yet that at two places there occur wide gaps in the series: whence it is inferred that, on at least two occasions, the previously existing inhabitants of the Earth were almost wholly destroyed, and a different class of inhabitants created. Comparing the general life on the Earth to a thread, Hugh Miller says:—

“ It is continuous from the present time up to the commencement



of the Tertiary period; and then so abrupt a break occurs, that, with the exception of the microscopic diatomaceæ to which I last evening referred, and of one shell and one coral, not a single species crossed the gap. On its farther or remoter side, however, where the Secondary division closes, the intermingling of species again begins, and runs on till the commencement of this great Secondary division; and then, just where the Palæozoic division closes, we find another abrupt break, crossed, if crossed at all,—for there still exists some doubt on the subject,—by but two species of plant.”

These breaks are considered to imply actual new creations on the surface of our planet; not only by Hugh Miller, but by the majority of geologists. And the terms Palæozoic, Mesozoic, and Cainozoic, are used to indicate these three successive systems of life. It is true that some accept this belief with caution: knowing how geologic research has been all along tending to fill up what were once thought wide breaks. Sir Charles Lyell points out that “the hiatus which exists in Great Britain between the fossils of the Lias and those of the Magnesian Limestone, is supplied in Germany by the rich fauna and flora of the Muschelkalk, Keuper, and Bunter Sandstein, which we know to be of a date precisely intermediate.” Again he remarks that “until lately the fossils of the coal-measures were separated from those of the antecedent Silurian group by a very abrupt and decided line of demarcation; but recent discoveries have brought to light in Devonshire, Belgium, the Eifel, and Westphalia, the remains of a fauna of an intervening period.” And once more, “we have also in like manner had some success of late years in diminishing the hiatus which still separates the Cretaceous and Eocene periods in Europe.” To which let us add that since Hugh Miller penned the passage above quoted, the second of the great gaps he refers to has been very considerably narrowed by the discovery of strata containing Palæozoic genera and Mesozoic genera intermingled. Nevertheless, the occurrence of two great revolutions in the Earth’s Flora and Fauna appears still to be held by many; and geologic nomenclature habitually assumes it.

Before seeking a solution of these phenomena, let us glance at the several minor causes that produce breaks in the geological succession of organic forms: taking first, the more general ones which modify climate, and, therefore, the distribution of life. Among these may be noted one which has not, we believe, been named by writers on the subject. We mean that resulting from a certain slow astronomic rhythm, by which the northern and southern hemispheres are alternately subject to greater extremes of temperature. In consequence of the slight ellipticity of its orbit, the Earth's distance from the sun varies to the extent of some 3,000,000 of miles. At present, the aphelion occurs at the time of our northern summer; and the perihelion during the summer of the southern hemisphere. In consequence, however, of that slow movement of the Earth's axis which produces the precession of the equinoxes, this state of things will in time be reversed: the Earth will be nearest to the sun during the summer of the northern hemisphere, and furthest from it during the southern summer or northern winter. The period required to complete the slow movement producing these changes, is nearly 26,000 years; and were there no modifying process, the two hemispheres would alternately experience this coincidence of summer with the least distance from the sun, during a period of 13,000 years. But there is also a still slower change in the direction of the axis major of the Earth's orbit; from which it results that the alternation we have described is completed in about 21,000 years. That is to say, if at a given time the Earth is nearest to the sun at our mid-summer, and furthest from the sun at our mid-winter; then, in 10,500 years afterwards, it will be furthest from the sun at our mid-summer, and nearest at our mid-winter. Now the difference between the distances from the sun at the two extremes of this alternation, amounts to one-thirtieth; and hence, the difference between the quantities of heat received from the sun on a summer's day under these opposite conditions amounts to one-fifteenth. Estimating this, not with reference to the zero

of our thermometers, but with reference to the temperature of the celestial spaces, Sir John Herschel calculates "23° Fahrenheit as the least variation of temperature under such circumstances which can reasonably be attributed to the actual variation of the sun's distance." Thus, then, each hemisphere has at a certain epoch, a short summer of extreme heat, followed by a long and very cold winter. Through the slow change in the direction of the Earth's axis, these extremes are gradually mitigated. And at the end of 10,500 years, there is reached the opposite state—a long and moderate summer, with a short and mild winter. At present, in consequence of the predominance of sea in the southern hemisphere, the extremes to which its astronomical conditions subject it, are much ameliorated; while the great proportion of land in the northern hemisphere, tends to exaggerate such contrast as now exists in it between winter and summer: whence it results that the climates of the two hemispheres are not widely unlike. But 10,000 years hence, the northern hemisphere will undergo annual variations of temperature far more marked than now.

In the last edition of his *Outlines of Astronomy*, Sir John Herschel recognizes this as an element in geological processes: regarding it as possibly a part-cause of those climatic changes indicated by the records of the Earth's past. That it has had much to do with the larger changes of climate of which we have evidence, seems unlikely, since there is reason to think that these have been far slower and more lasting; but that it must have entailed a rhythmical exaggeration and mitigation of the climates otherwise produced, seems beyond question. And it seems also beyond question that there must have been a consequent rhythmical change in the distribution of organisms—a rhythmical change to which we here wish to draw attention, as one cause of minor breaks in the succession of fossil remains. Each species of plant and animal, has certain limits of heat and cold within which only it can exist; and these limits in a great degree determine its geographical

position. It will not spread north of a certain latitude, because it cannot bear a more northern winter, nor south of a certain latitude, because the summer heat is too great; or else it is indirectly restrained from spreading further by the effect of temperature on the humidity of the air, or on the distribution of the organisms it lives upon. But now, what will result from a slow alteration of climate, produced as above described? Supposing the period we set out from is that in which the contrast of seasons is least marked, it is manifest that during the progress towards the period of the most violent contrast, each species of plant and animal will gradually change its limits of distribution—will be driven back, here by the winter's increasing cold, and there by the summer's increasing heat—will retire into those localities that are still fit for it. Thus during 10,000 years, each species will ebb away from certain regions it was inhabiting; and during the succeeding 10,000 years will flow back into those regions. From the strata there forming, its remains will disappear; they will be absent from some of the superposed strata; and will be found in strata higher up. But in what shapes will they re-appear? Exposed during the 21,000 years of their slow recession and their slow return, to changing conditions of life, they are likely to have undergone modifications; and will probably re-appear with slight differences of constitution and perhaps of form—will be new varieties or perhaps new sub-species.

To this cause of minor breaks in the succession of organic forms—a cause on which we have dwelt because it has not been taken into account—we must add sundry others. Besides these periodically-recurring alterations of climate, there are the irregular ones produced by re-distributions of land and sea; and these, sometimes less, sometimes greater, in degree, than the rhythmical changes, must, like them, cause in each region the ebb and flow of species; and consequent breaks, small or large as the case may be, in the palæontological series. Other and more special geological changes

must produce other and more local blanks in the succession of fossils. By some inland elevation the natural drainage of a continent is modified ; and instead of the sediment it previously brought down to the sea, a great river begins to bring down sediment unfavourable to various plants and animals living in its delta : wherefore these disappear from the locality, perhaps to re-appear in a changed form after a long epoch. Upheavals or subsidences of shores or sea-bottoms, involving deviations of marine currents, must remove the habitats of many species to which such currents are salutary or injurious ; and further, this re-distribution of currents must alter the places of sedimentary deposits, and so stop the burying of organic remains in some localities, and commence it in others. Had we space, many more such causes of blanks in our palæontological records might be added. But it is needless here to enumerate them. They are admirably explained and illustrated in Sir Charles Lyell's *Principles of Geology*.

Now, if these minor revolutions of the Earth's surface produce minor breaks in the series of fossilized remains ; must not great revolutions produce great breaks ? If a local upheaval or subsidence causes throughout its small area the absence of some links in the chain of fossil forms ; does it not follow that an upheaval or subsidence extending over a large part of the Earth's surface, must cause the absence of a great number of such links throughout a very wide area ?

When during a long epoch a continent, slowly subsiding, gives place to a far-spreading ocean some miles in depth, at the bottom of which no deposits from rivers or abraded shores can be thrown down ; and when, after some enormous period, this ocean-bottom is gradually elevated and becomes the site of new strata ; it is clear that the fossils contained in these new strata are likely to have but little in common with the fossils of the strata below them. Take, in illustration, the case of the North Atlantic. We have already named the fact that between this country and the United States,

the ocean-bottom is being covered with a deposit of chalk—a deposit that has been forming, probably, ever since there occurred that great depression of the Earth's crust from which the Atlantic resulted in remote geologic times. This chalk consists of the minute shells of Foraminifera, sprinkled with remains of small Entomostraca, and probably a few Pteropod-shells: though the sounding lines have not yet brought up any of these last. Thus, in so far as all high forms of life are concerned, this new chalk-formation must be a blank. At rare intervals, perhaps, a polar bear drifted on an iceberg, may have its bones scattered over the bed; or a dead, decaying whale may similarly leave traces. But such remains must be so rare, that this new chalk-formation, if visible, might be examined for a century before any of them were disclosed. If now, some millions of years hence, the Atlantic-bed should be raised, and estuary or shore deposits laid upon it, these deposits would contain remains of a Flora and Fauna so distinct from everything below them, as to appear like a new creation.

Thus, along with continuity of life on the Earth's surface, there not only *may* be, but there *must* be, great gaps in the series of fossils; and hence these gaps are no evidence against the doctrine of Evolution.

One other current assumption remains to be criticized; and it is the one on which, more than on any other, depends the view taken respecting the question of development.

From the beginning of the controversy, the arguments for and against have turned upon the evidence of progression in organic forms, found in the ascending series of our sedimentary formations. On the one hand, those who contend that higher organisms have been evolved out of lower, joined with those who contend that successively higher organisms have been created at successively later periods, appeal for proof to the facts of Palæontology; which, they say, countenance their views. On the other hand, the Uniformitarians, who not

only reject the hypothesis of development, but deny that the modern forms of life are higher than the ancient ones, reply that the Palæontological evidence is at present very incomplete; that though we have not yet found remains of highly-organized creatures in strata of the greatest antiquity, we must not assume that no such creatures existed when those strata were deposited; and that, probably, geological research will eventually disclose them.

It must be admitted that thus far, the evidence has gone in favour of the latter party. Geological discovery has year after year shown the small value of negative facts. The conviction that there are no traces of higher organisms in earlier strata, has resulted not from the absence of such remains, but from incomplete examination. At p. 460 of his *Manual of Elementary Geology*, Sir Charles Lyell gives a list in illustration of this. It appears that in 1709, fishes were not known lower than the Permian system. In 1793 they were found in the subjacent Carboniferous system; in 1828 in the Devonian; in 1840 in the Upper Silurian. Of reptiles, we read that in 1710 the lowest known were in the Permian; in 1844 they were detected in the Carboniferous; and in 1852 in the Upper Devonian. While of the Mammalia the list shows that in 1798 none had been discovered below the middle Eocene; but that in 1818 they were discovered in the Lower Oolite; and in 1847 in the Upper Trias.

The fact is, however, that both parties set out with an inadmissible postulate. Of the Uniformitarians, not only such writers as Hugh Miller, but also such as Sir Charles Lyell,<sup>1</sup> reason as though we had found the earliest, or something like the earliest, strata. Their antagonists, whether defenders of the Development Hypothesis or simply Progressionists, almost uniformly do the like. Sir R. Murchison, who is a Progressionist, calls the lowest fossiliferous strata,

<sup>1</sup> Sir Charles Lyell is no longer to be classed among Uniformitarians. With rare and admirable candour he has, since this was written, yielded to the arguments of Mr. Darwin.

“Protozoic.” Prof. Ansted uses the same term. Whether avowedly or not, all the disputants stand on this assumption as their common ground.

Yet is this assumption indefensible, as some who make it very well know. Facts may be cited against it which show that it is a more than questionable one—that it is a highly improbable one; while the evidence assigned in its favour will not bear criticism.

Because in Bohemia, Great Britain, and portions of North America, the lowest unmetamorphosed strata yet discovered, contain but slight traces of life, Sir R. Murchison conceives that they were formed while yet few, if any, plants or animals had been created; and, therefore, classes them as “Azoic.” His own pages, however, show the illegitimacy of the conclusion that there existed at that period no considerable amount of life. Such traces of life as have been found in the Longmynd rocks, for many years considered unfossiliferous, have been found in some of the lowest beds; and the twenty thousand feet of superposed beds, still yield no organic remains. If now these superposed strata throughout a depth of four miles, are without fossils, though the strata over which they lie prove that life had commenced; what becomes of Sir R. Murchison’s inference? At page 189 of *Siluria*, a still more conclusive fact will be found. The “Glengariff grits,” and other accompanying strata there described as 13,500 feet thick, contain no signs of contemporaneous life. Yet Sir R. Murchison refers them to the Devonian period—a period that had a large and varied marine Fauna. How then, from the absence of fossils in the Longmynd beds and their equivalents, can we conclude that the Earth was “azoic” when they were formed?

“But,” it may be asked, “if living creatures then existed, why do we not find fossiliferous strata of that age, or an earlier age?” One reply is, that the non-existence of such strata is but a negative fact—we have not found them. And considering how little we know even of the two-fifths of the



Earth's surface now above the sea, and how absolutely ignorant we are of the three-fifths below the sea, it is rash to say that no such strata exist. But the chief reply is, that these records of the Earth's earlier history have been in great part destroyed, by agencies that are ever tending to destroy such records.

It is an established geological doctrine, that sedimentary strata are liable to be changed, more or less completely, by igneous action. The rocks originally classed as "transition," because they were intermediate in character between the igneous rocks found below them, and the sedimentary strata found above them, are now known to be nothing else than sedimentary strata altered in texture and appearance by the intense heat of adjacent molten matter; and hence are renamed "metamorphic rocks." Modern researches have shown, too, that these metamorphic rocks are not, as was once supposed, all of the same age. Besides primary and secondary strata that have been transformed by igneous action, there are similarly-changed deposits of tertiary origin; and that, even for a quarter of a mile from the point of contact with neighbouring granite. By this process fossils are of course destroyed. "In some cases," says Sir Charles Lyell, "dark limestones, replete with shells and corals, have been turned into white statuary marble, and hard clays, containing vegetable or other remains, into slates called mica-schist or hornblende-schist; every vestige of the organic bodies having been obliterated." Again, it is fast becoming an acknowledged truth, that igneous rock, of whatever kind, is the product of sedimentary strata that have been completely melted. Granite and gneiss, which are of like chemical composition, have been shown, in various cases, to pass one into the other: as at Valorsine, near Mont Blanc, where the two, in contact, are observed to "both undergo a modification of mineral character. The granite still remaining unstratified, becomes charged with green particles; and the talcose gneiss assumes a granitiform structure without losing its stratification." In

the Aberdeen-granite, lumps of unmelted gneiss are frequently found ; and we can ourselves bear witness that on the banks of Loch Sunart, there is ample proof that the granite of that region, when it was molten, contained incompletely-fused clots of sedimentary strata. Nor is this all. Fifty years ago, it was thought that all granitic rocks were primitive, or existed before any sedimentary strata ; but it is now “no easy task to point out a single mass of granite demonstrably more ancient than all the known fossiliferous deposits.” In brief, accumulated evidence clearly shows, that by contact with, or proximity to, the molten matter of the Earth’s nucleus, all beds of sediment are liable to be actually melted, or partially fused, or so heated as to agglutinate their particles ; and that according to the temperature they have been raised to, and the circumstances under which they cool, they assume the forms of granite, porphyry, trap, gneiss, or rock otherwise altered. Further, it is manifest that though strata of various ages have been thus changed, yet that the most ancient strata have been so changed to the greatest extent : both because they have habitually lain nearer to the centre of igneous agency ; and because they have been for a longer period liable to the effects of this agency. Whence it follows, that sedimentary strata passing a certain antiquity, are unlikely to be found in an unmetamorphosed state ; and that strata much earlier than these are certain to have been melted up. Thus if, throughout a past of indefinite duration, there had been at work those aqueous and igneous agencies which we see still at work, the state of the Earth’s crust might be just what we find it. We have no evidence which puts a limit to the period throughout which this formation and destruction of strata has been going on. For aught the facts prove, it may have been going on for ten times the period measured by our whole series of sedimentary deposits.

Besides having, in the present appearances of the Earth’s crust, no data for fixing a commencement to these processes—besides finding that the evidence permits us to assume such

commencement to have been inconceivably remote, as compared even with the vast eras of geology; we are not without positive grounds for inferring the inconceivable remoteness of such commencement. Modern geology has established truths which are irreconcilable with the belief that the formation and destruction of strata began when the Cambrian rocks were formed; or at anything like so recent a time. One fact from *Siluria* will suffice. Sir R. Murchison estimates the vertical thickness of Silurian strata in Wales, at from 26,000 to 27,000 feet, or about five miles; and if to this we add the vertical depth of the Cambrian strata, on which the Silurians lie conformably, there results, on the lowest computation, a total depth of some seven miles. Now it is held by geologists, that this vast accumulation of strata must have been deposited in an area of gradual subsidence. These strata could not have been thus laid on each other in regular order, unless the Earth's crust had been at that place sinking, either continuously or by very small steps. Such an immense subsidence, however, must have been impossible without a crust of great thickness. The Earth's molten nucleus tends ever, with enormous force, to assume the form of a regular oblate spheroid. Any depression of its crust below the surface of equilibrium, and any elevation of its crust above that surface, have to withstand immense resistance. It follows inevitably that, with a thin crust, nothing but small elevations and subsidences would be possible; and that, conversely, a subsidence of seven miles implies a crust of comparatively great strength, or, in other words, of great thickness. Indeed, if we compare this inferred subsidence in the Silurian period, with such elevations and depressions as our existing continents and oceans display, we see no evidence that the Earth's crust was appreciably thinner than now. What are the implications? If, as geologists generally admit, the Earth's crust has resulted from that slow cooling which is even still going on—if we see no sign that at the time when the earliest Cambrian strata were formed,

this crust was appreciably thinner than now ; we are forced to conclude that the era during which it acquired that great thickness possessed in the Cambrian period, was enormous as compared with the interval between the Cambrian period and our own. But during the incalculable series of epochs thus inferred, there existed an ocean, tides, winds, waves, rain, rivers. The agencies by which the denudation of continents and filling up of seas have all along been carried on, were as active then as now. Endless successions of strata must have been formed. And when we ask—Where are they ? Nature's obvious reply is—They have been destroyed by that igneous action to which so great a part of our oldest-known strata owe their fusion or metamorphosis.

Only the last chapter of the Earth's history has come down to us. The many previous chapters, stretching back to a time immeasurably remote, have been burnt ; and with them all the records of life we may presume they contained. The greater part of the evidence which might have served to settle the Development-controversy, is for ever lost ; and on neither side can the arguments derived from Geology be conclusive.

“But how happen there to be such evidences of progression as exist ?” it may be asked. “How happens it that, in ascending from the most ancient strata to the most recent strata, we *do* find a succession of organic forms, which, however irregularly, carries us from lower to higher ?” This question seems difficult to answer. Nevertheless, there is reason for thinking that nothing can be safely inferred from the apparent progression here cited. And the illustration which shows as much, will, we believe, also show how little trust is to be placed in certain geological generalizations that appear to be well established. With this somewhat elaborate illustration, to which we now pass, our criticisms may fitly conclude.

Let us suppose that in a region now covered by wide ocean, there begins one of those great and gradual upheavals by

which new continents are formed. To be precise, let us say that in the South Pacific, midway between New Zealand and Patagonia, the sea-bottom has been little by little thrust up toward the surface, and is about to emerge. What will be the successive phenomena, geological and biological, which are likely to occur before this emerging sea-bottom has become another Europe or Asia? In the first place, such portions of the incipient land as are raised to the level of the waves, will be rapidly denuded by them: their soft substance will be torn up by the breakers, carried away by the local currents, and deposited in neighbouring deeper water. Successive small upheavals will bring new and larger areas within reach of the waves; fresh portions will each time be removed from the surfaces previously denuded; and further, some of the newly-formed strata, being elevated nearly to the level of the water, will be washed away and re-deposited. In course of time, the harder formations of the upraised sea-bottom will be uncovered. These, being less easily destroyed, will remain permanently above the surface; and at their margins will arise the usual breaking down of rocks into beach-sand and pebbles. While in the slow process of this elevation, going on at the rate of perhaps two or three feet in a century, most of the sedimentary deposits produced will be again and again destroyed and reformed; there will, in those adjacent areas of subsidence which accompany areas of elevation, be more or less continuous successions of sedimentary deposits. And now, what will be the character of these new strata? They will necessarily contain scarcely any traces of life. The deposits that had previously been slowly formed at the bottom of this wide ocean, would be sprinkled with fossils of but few species. The oceanic Fauna is not a rich one; its hydrozoa do not admit of preservation; and the hard parts of its few kinds of molluses and crustaceans and insects are mostly fragile. Hence, when the ocean-bed was here and there raised to the surface—when its strata of sediment with their contained organic fragments were torn up and long washed about

by the breakers before being re-deposited—when the re-deposits were again and again subject to this violent abrading action by subsequent small elevations, as they would mostly be ; what few fragile organic remains they contained, would be in nearly all cases destroyed. Thus such of the first-formed strata as survived the repeated changes of level, would be practically “azoic ;” like the Cambrian of our geologists. When by the washing away of the soft deposits, the hard sub-strata had been exposed in the shape of rocky islets, and a footing had thus been furnished, the pioneers of a new life might be expected to make their appearance. What would they be ? Not any of the surrounding oceanic species, for these are not fitted for a littoral life ; but species flourishing on some of the far-distant shores of the Pacific. Of such the first to establish themselves would be sea-weeds and zoophytes : both because their swarming spores and gemmules would be the most readily conveyed with safety, and because when conveyed they would find fit food. It is true that Cirrhipeds and Lamellibranchs, subsisting on the minute creatures which everywhere people the sea, would also find fit food. But passing over the fact that the germs of such higher forms are neither so abundant nor so well fitted to bear long voyages, there is the more important fact that the individuals arising from these germs can reproduce only sexually, and that this vastly increases the obstacles to the establishment of their races. The chances of early colonization are immensely in favour of species which, multiplying by agamogenesis, can people a whole shore from a single germ ; and immensely against species which, multiplying only by gamogenesis, must be introduced in considerable numbers that some may survive, meet, and propagate. Thus we infer that the earliest traces of life left in the sedimentary deposits near these new shores, will be traces of life as humble as that indicated in the most ancient rocks of Great Britain and Ireland. Imagine now that the processes we have briefly indicated, continue—-that the emerging lands

become wider in extent, and fringed by higher and more varied shores; and that there still go on those ocean-currents which, at long intervals, convey from far distant shores immigrant forms of life. What will result? Lapse of time will of course favour the introduction of such new forms: admitting, as it must, of those combinations of fit conditions, which, under the law of probabilities, can occur only at very distant intervals. Moreover, the increasing area of the islands, individually and as a group, implies increasing length of coast; from which there follows a longer line of contact with the streams and waves that bring drifting masses; and, therefore, a greater chance that germs of fresh life will be stranded. And once more, the comparatively-varied shores, presenting physical conditions that change from mile to mile, will furnish suitable habitats for more numerous species. So that as the elevation proceeds, three causes conspire to introduce additional marine plants and animals. To what classes will the increasing Fauna be for a long period confined? Of course, to classes of which individuals, or their germs, are most liable to be carried far away from their native shores by floating sea-weed or drift-wood; to classes which are also least likely to perish in transit, or from change of climate; and to those which can best subsist around coasts comparatively bare of life. Evidently then, corals, annelids, inferior molluses, and crustaceans of low grade, will chiefly constitute the early Fauna. The large predatory members of these classes, will be later in establishing themselves; both because the new shores must first become well peopled by the creatures they prey on, and because, being more complex, they, or their ova, must be less likely to survive the journey, and the change of conditions. We may infer, then, that the strata deposited next after the almost "azoic" strata, would contain the remains of invertebrata, allied to those found near the shores of Australia and South America. Of such invertebrate remains, the lower beds would furnish comparatively few genera, and those of relatively low types; while in the upper beds the number of

genera would be greater, and the types higher: just as among the fossils of our Silurian system. As this great geologic change slowly progressed through its long history of earthquakes, volcanic disturbances, minor upheavals and subsidences—as the extent of the archipelago became greater and its smaller islands coalesced into larger ones, while its coastline grew still longer and more varied, and the neighbouring sea more thickly inhabited by inferior forms of life; the lowest division of the vertebrata would begin to be represented. In order of time, fish would naturally come after the lower invertebrata: both as being less likely to have their ova transported across the waste of waters, and as requiring for their subsistence a pre-existing Fauna of some development. They might be expected to make their appearance along with the predaceous crustaceans; as they do in the uppermost Silurian rocks. And here, too, let us remark, that as, during this long epoch we have been describing, the sea would have made great inroads on some of the newly-raised lands that had remained stationary; and would probably in some places have reached masses of igneous or metamorphic rocks; there might, in course of time, arise by the decomposition and denudation of such rocks, local deposits coloured with oxide of iron, like our Old Red Sandstone. And in these deposits might be buried the remains of the fish then peopling the neighbouring sea.

Meanwhile, how would the surfaces of the upheaved masses be occupied? At first their deserts of naked rocks and pebbles would bear only the humblest forms of vegetal life, such as we find in grey and orange patches on our own rugged mountain sides; for these alone could flourish on such surfaces, and their spores would be the most readily transported. When, by the decay of such protophytes, and that decomposition of rock effected by them, there had resulted a fit habitat for mosses; these, of which the germs might be conveyed in drifted trees, would begin to spread. A soil having been eventually thus produced, it would be-



come possible for plants of higher organization to find root-hold; and as in the way we have described the archipelago and its constituent islands grew larger, and had more multiplied relations with winds and waters, such higher plants might be expected ultimately to have their seeds transferred from the nearest lands. After something like a Flora had thus colonized the surface, it would become possible for insects to exist; and of air-breathing creatures, insects would manifestly be among the first to find their way from elsewhere. As, however, terrestrial organisms, both vegetal and animal, are much less likely than marine organisms to survive the accidents of transport from distant shores; it is clear that long after the sea surrounding these new lands had acquired a varied Flora and Fauna, the lands themselves would still be comparatively bare; and thus that the early strata, like our Silurians, would afford no traces of terrestrial life. By the time that large areas had been raised above the ocean, we may fairly suppose a luxuriant vegetation to have been acquired. Under what circumstances are we likely to find this vegetation fossilized? Large surfaces of land imply large rivers with their accompanying deltas; and are liable to have lakes and swamps. These, as we know from extant cases, are favourable to rank vegetation; and afford the conditions needful for preserving it in the shape of coal-beds. Observe, then, that while in the early history of such a continent a carboniferous period could not occur, the occurrence of a carboniferous period would become probable after long-continued upheavals had uncovered large areas. As in our own sedimentary series, coal-beds would make their appearance only after there had been enormous accumulations of earlier strata charged with marine fossils.

Let us ask next, in what order the higher forms of animal life would make their appearance. We have seen how, in the succession of marine forms, there would be something like a progress from the lower to the higher: bringing us in the end to predaceous molluscs, crustaceans, and fish. What

are likely to succeed fish? After marine creatures, those which would have the greatest chance of surviving the voyage would be amphibious reptiles: both because they are more tenacious of life than higher animals, and because they would be less completely out of their element. Such reptiles as can live in both fresh and salt water, like alligators; and such as are drifted out of the mouths of great rivers on floating trees, as Humboldt says the Orinoco alligators are; might be early colonists. It is manifest, too, that reptiles of other kinds would be among the first vertebrata to people the new continent. If we consider what will occur on one of those natural rafts of trees, soil, and matted vegetable matter, sometimes swept out to sea by such currents as the Mississippi, with a miscellaneous living cargo; we shall see that while the active, hot-blooded, highly-organized creatures will soon die of starvation and exposure, the inert, cold-blooded ones, which can go long without food, will live perhaps for weeks; and so, out of the chances from time to time occurring during long periods, reptiles will be the first to get safely landed on foreign shores: as indeed they are even now known sometimes to be. The transport of mammalia being comparatively precarious, must, in the order of probability, be longer postponed; and would, indeed, be unlikely to occur until by the enlargement of the new continent, the distances of its shores from adjacent lands had been greatly diminished, or the formation of intervening islands had increased the chances of survival. Assuming, however, that the facilities of immigration had become adequate; which would be the first mammals to arrive and live? Not large herbivores; for they would be soon drowned if by any accident carried out to sea. Not the carnivora; for these would lack appropriate food, even if they outlived the voyage. Small quadrupeds frequenting trees, and feeding on insects, would be those most likely both to be drifted away from their native lands and to find fit food in a new one. Insectivorous mammals, like in size to those found in the Trias and the Stonesfield slate, might naturally

be looked for as the pioneers of the higher vertebrata. And if we suppose the facilities of communication to be again increased, either by a further shallowing of the intervening sea and a consequent multiplication of islands, or by an actual junction of the new continent with an old one, through continued upheavals; we should finally have an influx of the larger and more perfect mammals.

Now rude as is this sketch of a process that would be extremely elaborate and involved, and open as some of its propositions are to criticisms which there is no space here to meet; no one will deny that it represents something like the biologic history of the supposed new continent. Details apart, it is manifest that simple organisms, able to flourish under simple conditions of life, would be the first successful immigrants; and that more complex organisms, needing for their existence the fulfilment of more complex conditions, would afterwards establish themselves in something like an ascending succession. At the one extreme we see every facility. The new individuals can be conveyed in the shape of minute germs; these are infinite in their numbers; they are diffused in the sea; they are perpetually being carried in all directions to great distances by ocean-currents; they can survive such long journeys unharmed; they can find nutriment wherever they arrive; and the resulting organisms can multiply asexually with great rapidity. At the other extreme, we see every difficulty. The new individuals must be conveyed in their adult forms; their numbers are, in comparison, utterly insignificant; they live on land, and are very unlikely to be carried out to sea; when so carried, the chances are immense against their escape from drowning, starvation, or death by cold; if they survive the transit, they must have a pre-existing Flora or Fauna to supply their special food; they require, also, the fulfilment of various other physical conditions; and unless at least two individuals of different sexes are safely landed, the race cannot be established. Manifestly, then, the immigration of each successively higher

order of organisms, having, from one or other additional condition to be fulfilled, an enormously-increased probability against it, would naturally be separated from the immigration of a lower order by some period like a geologic epoch. And thus the successive sedimentary deposits formed while this new continent was undergoing gradual elevation, would seem to furnish clear evidence of a general progress in the forms of life. That lands thus raised up in the midst of a wide ocean, would first give origin to unfossiliferous strata; next, to strata containing only the lowest marine forms; next, to strata containing higher marine forms, ascending finally to fish; and that the strata above these would contain reptiles, then small mammals, then great mammals; seems to us to be demonstrable from the known laws of organic life. And if the succession of fossils presented by the strata of this supposed new continent, would thus simulate the succession presented by our own sedimentary series; must we not say that our own sedimentary series very possibly records nothing more than the phenomena accompanying one of these great upheavals? We think this must be considered not only possible, but highly probable: harmonizing as it does with the unavoidable conclusion before pointed out, that geological changes must have been going on for a period immeasurably greater than that of which we have records. And if the probability of this conclusion be admitted, it must be admitted that the facts of Paleontology can never suffice either to prove or disprove the Development Hypothesis; but that the most they can do is, to show whether the last few pages of the Earth's biologic history, are or are not in harmony with this hypothesis—whether the existing Flora and Fauna can or can not be affiliated upon the Flora and Fauna of the most recent geologic times.

## THE PHYSIOLOGY OF LAUGHTER.

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WHY do we smile when a child puts on a man's hat? or what induces us to laugh on reading that the corpulent Gibbon was unable to rise from his knees after making a tender declaration? The usual reply to such questions is, that laughter results from a perception of incongruity. Even were there not on this reply the obvious criticism that laughter often occurs from extreme pleasure or from mere vivacity, there would still remain the real problem—How comes a sense of the incongruous to be followed by these peculiar bodily actions? Some have alleged that laughter is due to the pleasure of a relative self-elevation, which we feel on seeing the humiliation of others. But this theory, whatever portion of truth it may contain, is, in the first place, open to the fatal objection, that there are various humiliations to others which produce in us anything but laughter; and, in the second place, it does not apply to the many instances in which no one's dignity is implicated: as when we laugh at a good pun. Moreover, like the other, it is merely a generalization of certain conditions to laughter; and not an explanation of the odd movements which occur under these conditions. Why, when greatly delighted, or impressed with certain unexpected contrasts of ideas, should there be a contraction of particular facial muscles and particular muscles of the chest and abdomen? Such answer to this question as may be possible, can be rendered only by physiology.

Every child has made the attempt to hold the foot still while it is tickled, and has failed; and probably there is

scarcely any one who has not vainly tried to avoid winking, when a hand has been suddenly passed before the eyes. These examples of muscular movements which occur independently of the will, or in spite of it, illustrate what physiologists call reflex-action ; as likewise do sneezing and coughing. To this class of cases, in which involuntary motions are accompanied by sensations, has to be added another class of cases, in which involuntary motions are unaccompanied by sensations :—instance the pulsations of the heart ; the contractions of the stomach during digestion. Further, the great mass of seemingly-voluntary acts in such creatures as insects, worms, molluscs, are considered by physiologists to be as purely automatic as is the dilatation or closure of the iris under variations in quantity of light ; and similarly exemplify the law, that an impression on the end of an afferent nerve is conveyed to some ganglionic centre, and is thence usually reflected along an efferent nerve to one or more muscles which it causes to contract.

In a modified form this principle holds with voluntary acts. Nervous excitation always *tends* to beget muscular motion ; and when it rises to a certain intensity, always does beget it. Not only in reflex actions, whether with or without sensation, do we see that special nerves, when raised to states of tension, discharge themselves on special muscles with which they are indirectly connected ; but those external actions through which we read the feelings of others, show us that under any considerable tension, the nervous system in general discharges itself on the muscular system in general : either with or without the guidance of the will. The shivering produced by cold, implies irregular muscular contractions, which, though at first only partly involuntary, become, when the cold is extreme, almost wholly involuntary. When you have severely burnt your finger, it is very difficult to preserve a dignified composure : contortion of face, or movement of limb, is pretty sure to follow. If a man receives good news with neither change of feature nor bodily motion, it is inferred

that he is not much pleased, or that he has extraordinary self-control—either inference implying that joy almost universally produces contraction of the muscles; and so, alters the expression, or attitude, or both. And when we hear of the feats of strength which men have performed when their lives were at stake—when we read how, in the energy of despair, even paralytic patients have regained for a time the use of their limbs; we see still more clearly the relation between nervous and muscular excitements. It becomes manifest both that emotions and sensations tend to generate bodily movements, and that the movements are vehement in proportion as the emotions or sensations are intense.<sup>1</sup>

This, however, is not the sole direction in which nervous excitement expends itself. Viscera as well as muscles may receive the discharge. That the heart and blood-vessels (which, indeed, being all contractile, may in a restricted sense be classed with the muscular system) are quickly affected by pleasures and pains, we have daily proved to us. Every sensation of any acuteness accelerates the pulse; and how sensitive the heart is to emotions, is testified by the familiar expressions which use heart and feeling as convertible terms. Similarly with the digestive organs. Without detailing the various ways in which these may be influenced by our mental states, it suffices to mention the marked benefits derived by dyspeptics, as well as other invalids, from cheerful society, welcome news, change of scene, to show how pleasurable feeling stimulates the viscera in general into greater activity.

There is still another direction in which any excited portion of the nervous system may discharge itself; and a direction in which it usually does discharge itself when the excitement is not strong. It may pass on the stimulus to some other portion of the nervous system. This is what occurs in quiet thinking and feeling. The successive states which constitute consciousness, result from this. Sensations

<sup>1</sup> For numerous illustrations see essay on "The Origin and Function of Music."

excite ideas and emotions ; these in their turns arouse other ideas and emotions ; and so, continuously. That is to say, the tension existing in particular nerves, or groups of nerves, when they yield us certain sensations, ideas, or emotions, generates an equivalent tension in some other nerves, or groups of nerves, with which there is a connexion : the flow of energy passing on, the one idea or feeling dies in producing the next.

Thus, then, while we are totally unable to comprehend how the excitement of certain nerves should generate feeling—while, in the production of consciousness by physical agents acting on physical structure, we come to an absolute mystery never to be solved ; it is yet quite possible for us to know by observation what are the successive forms which this absolute mystery may take. We see that there are three channels along which nerves in a state of tension may discharge themselves ; or rather, I should say, three classes of channels. They may pass on the excitement to other nerves that have no direct connexions with the bodily members, and may so cause other feelings and ideas ; or they may pass on the excitement to one or more motor nerves, and so cause muscular contractions ; or they may pass on the excitement to nerves which supply the viscera, and may so stimulate one or more of these.

For simplicity's sake, I have described these as alternative routes, one or other of which any current of nerve-force must take ; thereby, as it may be thought, implying that such current will be exclusively confined to some one of them. But this is by no means the case. Rarely, if ever, does it happen that a state of nervous tension, present to consciousness as a feeling, expends itself in one direction only. Very generally it may be observed to expend itself in two ; and it is probable that the discharge is never absolutely absent from any one of the three. There is, however, variety in the *proportions* in which the discharge is divided among these different channels under different circumstances. In a man whose fear impels



him to run, the mental tension generated is only in part transformed into a muscular stimulus: there is a surplus which causes a rapid current of ideas. An agreeable state of feeling produced, say by praise, is not wholly used up in arousing the succeeding phase of the feeling, and the new ideas appropriate to it; but a certain portion overflows into the visceral nervous system, increasing the action of the heart, and probably facilitating digestion. And here we come upon a class of considerations and facts which open the way to a solution of our special problem.

For starting with the unquestionable truth, that at any moment the existing quantity of liberated nerve-force, which in an inscrutable way produces in us the state we call feeling, *must* expend itself in some direction—*must* generate an equivalent manifestation of force somewhere—it clearly follows that, if of the several channels it may take, one is wholly or partially closed, more must be taken by the others; or that if two are closed, the discharge along the remaining one must be more intense; and that, conversely, should anything determine an unusual efflux in one direction, there will be a diminished efflux in other directions.

Daily experience illustrates these conclusions. It is commonly remarked, that the suppression of external signs of feeling, makes feeling more intense. The deepest grief is silent grief. Why? Because the nervous excitement not discharged in muscular action, discharges itself in other nervous excitements—arouses more numerous and more remote associations of melancholy ideas, and so increases the mass of feelings. People who conceal their anger are habitually found to be more revengeful than those who explode in loud speech and vehement action. Why? Because, as before, the emotion is reflected back, accumulates, and intensifies. Similarly, men who, as proved by their powers of representation, have the keenest appreciation of the comic, are usually able to do and say the most ludicrous things with perfect gravity.

On the other hand, all are familiar with the truth that bodily activity deadens emotion. Under great irritation we get relief by walking about rapidly. Extreme effort in the bootless attempt to achieve a desired end, greatly diminishes the intensity of the desire. Those who are forced to exert themselves after misfortunes, do not suffer nearly so much as those who remain quiescent. If any one wishes to check intellectual excitement, he cannot choose a more efficient method than running till he is exhausted. Moreover, these cases, in which the production of feeling and thought is hindered by determining the nervous energy towards bodily movements, have their counterparts in the cases in which bodily movements are hindered by extra absorption of nervous energy in sudden thoughts and feelings. If, when walking along, there flashes on you an idea that creates great surprise, hope, or alarm, you stop; or if sitting cross-legged, swinging your pendent foot, the movement is at once arrested. From the viscera, too, intense mental action abstracts energy. Joy, disappointment, anxiety, or any moral perturbation rising to a great height, will destroy appetite; or if food has been taken, will arrest digestion; and even a purely intellectual activity, when extreme, will do the like.

Facts, then, fully bear out these *à priori* inferences, that the nervous excitement at any moment present to consciousness as feeling, must expend itself in some way or other; that of the three classes of channels open to it, it must take one, two, or more, according to circumstances; that the closure or obstruction of one, must increase the discharge through the others; and conversely, that if to answer some demand, the efflux of nervous energy in one direction is unusually great, there must be a corresponding decrease of the efflux in other directions. Setting out from these premises, let us now see what interpretation is to be put on the phenomena of laughter.

That laughter is a display of muscular excitement, and so

illustrates the general law that feeling passing a certain pitch habitually vents itself in bodily action, scarcely needs pointing out. It perhaps needs pointing out, however, that strong feeling of almost any kind produces this result. It is not a sense of the ludicrous, only, which does it; nor are the various forms of joyous emotion the sole additional causes. We have, besides, the sardonic laughter and the hysterical laughter, which result from mental distress; to which must be added certain sensations, as tickling, and, according to Mr. Bain, cold, and some kinds of acute pain.

Strong feeling, mental or physical, being, then, the general cause of laughter, we have to note that the muscular actions constituting it are distinguished from most others by this, that they are purposeless. In general, bodily motions that are prompted by feelings are directed to special ends; as when we try to escape a danger, or struggle to secure a gratification. But the movements of chest and limbs which we make when laughing have no object. And now remark that these quasi-convulsive contractions of the muscles, having no object, but being results of an uncontrolled discharge of energy, we may see whence arise their special characters—how it happens that certain classes of muscles are affected first, and then certain other classes. For an overflow of nerve-force, undirected by any motive, will manifestly take first the most habitual routes; and if these do not suffice, will next overflow into the less habitual ones. Well, it is through the organs of speech that feeling passes into movement with the greatest frequency. The jaws, tongue, and lips are used not only to express strong irritation or gratification; but that very moderate flow of mental energy which accompanies ordinary conversation, finds its chief vent through this channel. Hence it happens that certain muscles round the mouth, small and easy to move, are the first to contract under pleasurable emotion. The class of muscles which, next after those of articulation, are most constantly set in action (or extra action, we should say) by feelings of all kinds, are those

of respiration. Under pleasurable or painful sensations we breathe more rapidly: possibly as a consequence of the increased demand for oxygenated blood. The sensations that accompany exertion also bring on hard-breathing; which here more evidently responds to the physiological needs. And emotions, too, agreeable and disagreeable, both, at first, excite respiration; though the last subsequently depress it. That is to say, of the bodily muscles, the respiratory are more constantly implicated than any others in those various acts which our feelings impel us to; and, hence, when there occurs an undirected discharge of nervous energy into the muscular system, it happens that, if the quantity be considerable, it convulses not only certain of the articulatory and vocal muscles, but also those which expel air from the lungs. Should the feeling to be expended be still greater in amount—too great to find vent in these classes of muscles—another class comes into play. The upper limbs are set in motion. Children frequently clap their hands in glee; by some adults the hands are rubbed together; and others, under still greater intensity of delight, slap their knees and sway their bodies backwards and forwards. Last of all, when the other channels for the escape of the surplus nerve-force have been filled to overflowing, a yet further and less-used group of muscles is spasmodically affected: the head is thrown back and the spine bent inwards—there is a slight degree of what medical men call *opisthotonos*. Thus, then, without contending that the phenomena of laughter in all their details are to be so accounted for, we see that in their *ensemble* they conform to these general principles:—that feeling excites to muscular action; that when the muscular action is unguided by a purpose, the muscles first affected are those which feeling most habitually stimulates; and that as the feeling to be expended increases in quantity, it excites an increasing number of muscles, in a succession determined by the relative frequency with which they respond to the regulated dictates of feeling.

There still, however, remains the question with which we

set out. The explanation here given applies only to the laughter produced by acute pleasure or pain: it does not apply to the laughter that follows certain perceptions of incongruity. It is an insufficient explanation that in these cases, laughter is a result of the pleasure we take in escaping from the restraint of grave feelings. That this is a part-cause is true. Doubtless very often, as Mr. Bain says, "it is the coerced form of seriousness and solemnity without the reality that gives us that stiff position from which a contact with triviality or vulgarity relieves us, to our uproarious delight." And in so far as mirth is caused by the gush of agreeable feeling that follows the cessation of mental strain, it further illustrates the general principle above set forth. But no explanation is thus afforded of the mirth which ensues when the short silence between the *andante* and *allegro* in one of Beethoven's symphonies, is broken by a loud sneeze. In this, and hosts of like cases, the mental tension is not coerced but spontaneous—not disagreeable but agreeable; and the coming impressions to which the attention is directed, promise a gratification that few, if any, desire to escape. Hence, when the unlucky sneeze occurs, it cannot be that the laughter of the audience is due simply to the release from an irksome attitude of mind: some other cause must be sought.

This cause we shall arrive at by carrying our analysis a step further. We have but to consider the quantity of feeling that exists under such circumstances, and then to ask what are the conditions that determine the direction of its discharge, to at once reach a solution. Take a case. You are sitting in a theatre, absorbed in the progress of an interesting drama. Some climax has been reached which has aroused your sympathies—say, a reconciliation between the hero and heroine, after long and painful misunderstanding. The feelings excited by this scene are not of a kind from which you seek relief; but are, on the contrary, a grateful relief from the painful feelings with which you have witnessed the previous estrangement. Moreover, the sentiments

these fictitious personages have for the moment inspired you with, are not such as would lead you to rejoice in any indignity offered to them; but rather, such as would make you resent the indignity. And now, while you are contemplating the reconciliation with a pleasurable sympathy, there appears from behind the scenes a tame kid, which, having stared round at the audience, walks up to the lovers and sniffs at them. You cannot help joining in the roar which greets this *contretemps*. Inexplicable as is this irresistible burst on the hypothesis of a pleasure in escaping from mental restraint; or on the hypothesis of a pleasure from relative increase of self-importance, when witnessing the humiliation of others; it is readily explicable if we consider what, in such a case, must become of the feeling that existed at the moment the incongruity arose. A large mass of emotion had been produced; or, to speak in physiological language, a large portion of the nervous system was in a state of tension. There was also great expectation with respect to the further evolution of the scene—a quantity of vague, nascent thought and emotion, into which the existing quantity of thought and emotion was about to pass. Had there been no interruption, the body of new ideas and feelings next excited, would have sufficed to absorb the whole of the liberated nervous energy. But now, this large amount of nervous energy, instead of being allowed to expend itself in producing an equivalent amount of the new thoughts and emotions which were nascent, is suddenly checked in its flow. The channels along which the discharge was about to take place, are closed. The new channel opened—that afforded by the appearance and proceedings of the kid—is a small one; the ideas and feelings suggested are not numerous and massive enough to carry off the nervous energy to be expended. The excess must therefore discharge itself in some other direction; and in the way already explained, there results an efflux through the motor nerves to various classes of the muscles, producing the half-convulsive actions we term laughter.

This explanation is in harmony with the fact, that when, among several persons who witness the same ludicrous occurrence, there are some who do not laugh; it is because there has arisen in them an emotion not participated in by the rest, and which is sufficiently massive to absorb all the nascent excitement. Among the spectators of an awkward tumble, those who preserve their gravity are those in whom there is excited a degree of sympathy with the sufferer, sufficiently great to serve as an outlet for the feeling which the occurrence had turned out of its previous course. Sometimes anger carries off the arrested current; and so prevents laughter. An instance of this was lately furnished me by a friend who had been witnessing the feats at Franconi's. A tremendous leap had just been made by an acrobat over a number of horses. The clown, seemingly envious of this success, made ostentatious preparation for doing the like; and then, taking the preliminary run with immense energy, stopped short on reaching the first horse, and pretended to wipe some dust from its haunches. In the majority of the spectators, merriment was excited; but in my friend, wound up by the expectation of the coming leap to a state of great nervous tension, the effect of the baulk was to produce indignation. Experience thus proves what the theory implies: namely, that the discharge of arrested feelings into the muscular system, takes place only in the absence of other adequate channels—does not take place if there arise other feelings equal in amount to those arrested.

Evidence still more conclusive is at hand. If we contrast the incongruities which produce laughter with those which do not, we at once see that in the non-ludicrous ones the unexpected state of feeling aroused, though wholly different in kind, is not less in quantity or intensity. Among incongruities that may excite anything but a laugh, Mr. Bain instances—"A decrepit man under a heavy burden, five loaves and two fishes among a multitude, and all unfitness and gross disproportion; an instrument out of tune, a fly in

ointment, snow in May, Archimides studying geometry in a siege, and all discordant things ; a wolf in sheep's clothing, a breach of bargain, and falsehood in general ; the multitude taking the law in their own hands, and everything of the nature of disorder ; a corpse at a feast, parental cruelty, filial ingratitude, and whatever is unnatural ; the entire catalogue of the vanities given by Solomon, are all incongruous, but they cause feelings of pain, anger, sadness, loathing, rather than mirth." Now in these cases, where the totally unlike state of consciousness suddenly produced, is not inferior in mass to the preceding one, the conditions to laughter are not fulfilled. As above shown, laughter naturally results only when consciousness is unawares transferred from great things to small—only when there is what we may call a *descending* incongruity.

And now observe, finally, the fact, alike inferable *à priori* and illustrated in experience, that an *ascending* incongruity not only fails to cause laughter, but works on the muscular system an effect of exactly the reverse kind. When after something very insignificant there arises without anticipation something very great, the emotion we call wonder results ; and this emotion is accompanied not by an excitement of the muscles, but by a relaxation of them. In children and country people, that falling of the jaw which occurs on witnessing something that is imposing and unexpected, exemplifies this effect. Persons who have been wonder-struck at the production of very striking results by a seemingly inadequate cause, are frequently described as unconsciously dropping the things they held in their hands. Such are just the effects to be anticipated. After an average state of consciousness, absorbing but a small quantity of nervous energy, is aroused without the slightest notice, a strong emotion of awe, terror, or admiration ; joined with the astonishment due to an apparent want of adequate causation. This new state of consciousness demands far more nervous energy than that which it has suddenly replaced ; and this increased absorption



of nervous energy in mental changes, involves a temporary diminution of the outflow in other directions: whence the pendent jaw and the relaxing grasp.

One further observation is worth making. Among the several sets of channels into which surplus feeling might be discharged, was named the nervous system of the viscera. The sudden overflow of an arrested mental excitement, which, as we have seen, results from a descending incongruity, must doubtless stimulate not only the muscular system, as we see it does, but also the internal organs; the heart and stomach must come in for a share of the discharge. And thus there seems to be a good physiological basis for the popular notion that mirth-creating excitement facilitates digestion.

Though in doing so I go beyond the boundaries of the immediate topic, I may fitly point out that the method of inquiry here followed, is one which enables us to understand various phenomena besides those of laughter. To show the importance of pursuing it, I will indicate the explanation it furnishes of another familiar class of facts.

All know how generally a large amount of emotion disturbs the action of the intellect, and interferes with the power of expression. A speech delivered with great facility to tables and chairs, is by no means so easily delivered to an audience. Every schoolboy can testify that his trepidation, when standing before a master, has often disabled him from repeating a lesson which he had duly learnt. In explanation of this we commonly say that the attention is distracted—that the proper train of ideas is broken by the intrusion of ideas that are irrelevant. But the question is, in what manner does unusual emotion produce this effect; and we are here supplied with a tolerably obvious answer. The repetition of a lesson, or set speech previously thought out, implies the flow of a very moderate amount of nervous excitement through a comparatively narrow channel. The thing to be done is simply to call up in succession certain

previously-arranged ideas—a process in which no great amount of mental energy is expended. Hence, when there is a large quantity of emotion, which must be discharged in some direction or other; and when, as usually happens, the restricted series of intellectual actions to be gone through, does not suffice to carry it off; there result discharges along other channels besides the one prescribed: there are aroused various ideas foreign to the train of thought to be pursued; and these tend to exclude from consciousness those which should occupy it.

And now observe the meaning of those bodily actions spontaneously set up under these circumstances. The school-boy saying his lesson, commonly has his fingers actively engaged—perhaps in twisting about a broken pen, or perhaps in squeezing the angle of his jacket; and if told to keep his hands still, he soon again falls into the same or a similar trick. Many anecdotes are current of public speakers having incurable automatic actions of this class: barristers who perpetually wound and unwound pieces of tape; members of parliament ever putting on and taking off their spectacles. So long as such movements are unconscious, they facilitate the mental actions. At least this seems a fair inference from the fact that confusion frequently results from putting a stop to them: witness the case narrated by Sir Walter Scott of his school-fellow, who became unable to say his lesson after the removal of the waistcoat-button that he habitually fingered while in class. But why do they facilitate the mental actions? Clearly because they draw off a portion of the surplus nervous excitement. If, as above explained, the quantity of mental energy generated is greater than can find vent along the narrow channel of thought that is open to it; and if, in consequence, it is apt to produce confusion by rushing into other channels of thought; then by allowing it an exit through the motor nerves into the muscular system, the pressure is diminished, and irrelevant ideas are less likely to intrude on consciousness.

This further illustration will, I think, justify the position that something may be achieved by pursuing in other cases this method of psychological inquiry. A complete explanation of the phenomena, requires us to trace out *all* the consequences of any given state of consciousness ; and we cannot do this without studying the effects, bodily and mental, as varying in quantity at each other's expense. We should probably learn much if we in every case asked—Where is all the nervous energy gone ?

## BAIN ON THE EMOTIONS AND THE WILL.

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AFTER the controversy between the Neptunists and the Vulcanists had been long carried on without definite results, there came a reaction against all speculative geology. Reasoning without adequate data having led to nothing, inquirers went into the opposite extreme, and confining themselves wholly to collecting data, relinquished reasoning. The Geological Society of London was formed with the express object of accumulating evidence; for many years hypotheses were forbidden at its meetings; and only of late have attempts to organize the mass of observations into consistent theory been tolerated.

This reaction and subsequent re-reaction, well illustrate the recent history of English thought in general. The time was when our countrymen speculated, certainly to as great an extent as any other people, on all those high questions which present themselves to the human intellect; and, indeed, a glance at the systems of philosophy that are or have been current on the Continent, suffices to show how much other nations owe to the discoveries of our ancestors. For a generation or two, however, these more abstract subjects have fallen into neglect; and, among those who plume themselves on being "practical," even into contempt. Partly, perhaps, a natural accompaniment of our rapid material growth, this intellectual phase has been in great measure due to the exhaustion of argument, and the necessity for better data. Not so much with a conscious recognition of the end to be subserved, as from an unconscious subordination to that rhythm traceable in social changes as in other things, an era of

theorizing without observing, has been followed by an era of observing without theorizing. During this long-continued devotion to concrete science, an immense quantity of raw material for abstract science has been accumulated; and now there is obviously commencing a period in which this accumulated raw material will be organized into consistent theory. On all sides—equally in the inorganic sciences, in the science of life, and in the science of society—may we note the tendency to pass from the superficial and empirical to the more profound and rational.

In Psychology this change is conspicuous. The facts brought to light by anatomists and physiologists during the last fifty years, are at length being used towards the interpretation of this highest class of biological phenomena; and already there is promise of a great advance. The work of Mr. Alexander Bain, of which the second volume has been recently issued, may be regarded as especially characteristic of the transition. It gives us in orderly arrangement, the great mass of evidence supplied by modern science towards the building-up of a coherent system of mental philosophy. It is not in itself a system of mental philosophy, properly so called; but a classified collection of materials for such a system, presented with that method and insight which scientific discipline generates, and accompanied with occasional passages of an analytical character. It is indeed that which it in the main professes to be—a natural history of the mind. Were we to say that the researches of the naturalist who collects and dissects and describes species, bear the same relation to the researches of the comparative anatomist tracing out the laws of organization, which Mr. Bain's labours bear to the labours of the abstract psychologist, we should be going somewhat too far; for Mr. Bain's work is not wholly descriptive. Still, however, such an analogy conveys the best general conception of what he has done; and serves most clearly to indicate its needfulness. For as, before there can be made anything like true generalizations respecting the classification of

organisms and the laws of organization, there must be an extensive accumulation of the facts presented in numerous organic bodies; so, without a tolerably-complete delineation of mental phenomena of all orders, there can scarcely arise any adequate theory of the mind. Until recently, mental science has been pursued much as physical science was pursued by the ancients: not by drawing conclusions from observations and experiments, but by drawing them from arbitrary *à priori* assumptions. This course, long since abandoned in the one case with immense advantage, is gradually being abandoned in the other; and the treatment of Psychology as a division of natural history, shows that the abandonment will soon be complete.

Estimated as a means to higher results, Mr. Bain's work is of great value. Of its kind it is the most scientific in conception, the most catholic in spirit, and the most complete in execution. Besides delineating the various classes of mental phenomena as seen under that stronger light thrown on them by modern science, it includes in the picture much which previous writers had omitted—partly from prejudice, partly from ignorance. We refer more especially to the participation of bodily organs in mental changes; and the addition to the primary mental changes, of those many secondary ones which the actions of the bodily organs generate. Mr. Bain has, we believe, been the first to appreciate the importance of this element in our states of consciousness; and it is one of his merits that he shows how constant and large an element it is. Further, the relations of voluntary and involuntary movements are elucidated in a way that was not possible to writers unacquainted with the modern doctrine of reflex action. And beyond this, some of the analytical passages that here and there occur, contain important ideas.

Valuable, however, as is Mr. Bain's work, we regard it as essentially transitional. It presents in a digested form the results of a period of observation; adds to these results many well-delineated facts collected by himself; arranges new and

old materials with that more scientific method which the discipline of our times has fostered ; and so prepares the way for better generalizations. But almost of necessity its classifications and conclusions are provisional. In the growth of each science, not only is correct observation needful for the formation of true theory ; but true theory is needful as a preliminary to correct observation. Of course we do not intend this assertion to be taken literally ; but as a strong expression of the fact that the two must advance hand in hand. The first crude theory or rough classification, based on very slight knowledge of the phenomena, is requisite as a means of reducing the phenomena to some kind of order ; and as supplying a conception with which fresh phenomena may be compared, and their agreement or disagreement noted. Incongruities being by and by made manifest by wider examination of cases, there comes such modification of the theory as brings it into a nearer correspondence with the evidence. This reacts to the further advance of observation. More extensive and complete observation brings additional corrections of theory. And so on till the truth is reached. In mental science, the systematic collection of facts having but recently commenced, it is not to be expected that the results can be at once rightly formulated. All that may be looked for are approximate generalizations which will presently serve for the better directing of inquiry. Hence, even were it not now possible to say in what way it does so, we might be tolerably certain that Mr. Bain's work bears the stamp of the inchoate state of Psychology.

We think, however, that it will not be difficult to find in what respects its organization is provisional ; and at the same time to show what must be the nature of a more complete organization. We propose here to attempt this : illustrating our positions from his recently-issued second volume.

Is it possible to make a true classification without the aid of analysis ? or must there not be an analytical basis to

every true classification? Can the real relations of things be determined by the obvious characteristics of the things? or does it not commonly happen that certain hidden characteristics, on which the obvious ones depend, are the truly significant ones? This is the preliminary question which a glance at Mr. Bain's scheme of the emotions suggests.

Though not avowedly, yet by implication, Mr. Bain assumes that a right conception of the nature, the order, and the relations of the emotions, may be arrived at by contemplating their conspicuous objective and subjective characters, as displayed in the adult. After pointing out that we lack those means of classification which serve in the case of the sensations, he says—

“In these circumstances we must turn our attention to *the manner of diffusion* of the different passions and emotions, in order to obtain a basis of classification analogous to the arrangement of the sensations. If what we have already advanced on that subject be at all well founded, this is the genuine turning point of the method to be chosen, for the same mode of diffusion will always be accompanied by the same mental experience, and each of the two aspects would identify, and would be evidence of, the other. There is, therefore, nothing so thoroughly characteristic of any state of feeling as the nature of the diffusive wave that embodies it, or the various organs specially roused into action by it, together with the manner of the action. The only drawback is our comparative ignorance, and our inability to discern the precise character of the diffusive currents in every case; a radical imperfection in the science of mind as constituted at present.

“Our own consciousness, formerly reckoned the only medium of knowledge to the mental philosopher, must therefore be still referred to as a principal means of discriminating the varieties of human feeling. We have the power of noting agreement and difference among our conscious states, and on this we can raise a structure of classification. We recognise such generalities as pleasure, pain, love, anger, through the property of mental or intellectual discrimination that accompanies in our mind the fact of an emotion. A certain degree of precision is attainable by this mode of mental comparison and analysis; the farther we can carry such precision the better; but that is no reason why it should stand alone to the neglect of the corporeal embodiments through which one mind reveals itself to others. The companionship of inward feeling with bodily manifestation is a fact of the human constitution, and deserves to be



studied as such; and it would be difficult to find a place more appropriate than a treatise on the mind for setting forth the conjunctions and sequences traceable in this department of nature. I shall make no scruple in conjoining with the description of the mental phenomena the physical appearances, in so far as I am able to ascertain them.

“There is still one other quarter to be referred to in settling a complete arrangement of the emotions, namely, the varieties of human conduct, and the machinery created in subservience to our common susceptibilities. For example, the vast superstructure of fine art has its foundations in human feeling, and in rendering an account of this we are led to recognise the interesting group of artistic or æsthetic emotions. The same outward reference to conduct and creations brings to light the so-called moral sense in man, whose foundations in the mental system have accordingly to be examined.

“Combining together these various indications, or sources of discrimination,—outward objects, diffusive mode or expression, inward consciousness, resulting conduct and institutions—I adopt the following arrangement of the families or natural orders of emotion.”

Here, then, are confessedly adopted, as bases of classification, the most manifest characters of the emotions; as discerned subjectively, and objectively. The mode of diffusion of an emotion is one of its outside aspects; the institutions it generates form another of its outside aspects; and though the peculiarities of the emotion as a state of consciousness, seem to express its intrinsic and ultimate nature, yet such peculiarities as are perceptible by simple introspection, must also be classed as superficial peculiarities. It is a familiar fact that various intellectual states of consciousness turn out, when analyzed, to have natures widely unlike those which at first appear; and we believe the like will prove true of emotional states of consciousness. Just as our concept of space, which is apt to be thought a simple, undecomposable concept, is yet resolvable into experiences quite different from that state of consciousness which we call space; so, probably, the sentiment of affection or reverence is compounded of elements that are severally distinct from the whole which they make up. And much as a classification of our ideas which dealt with the idea of space as though it were ultimate, would be a classification of ideas by their externals; so, a classification

of our emotions, which, regarding them as simple, describes their aspects in ordinary consciousness, is a classification of emotions by their externals.

Thus, then, Mr. Bain's grouping is throughout determined by the most manifest attributes—those objectively displayed in the natural language of the emotions, and in the social phenomena that result from them, and those subjectively displayed in the aspects the emotions assume in an analytical consciousness. And the question is—Can they be correctly grouped after this method?

We think not; and had Mr. Bain carried farther an idea with which he has set out, he would probably have seen that they cannot. As already said, he avowedly adopts "the natural-history-method:" not only referring to it in his preface, but in his first chapter giving examples of botanical and zoological classifications, as illustrating the mode in which he proposes to deal with the emotions. This we conceive to be a philosophical conception; and we have only to regret that Mr. Bain has overlooked some of its most important implications. For in what has essentially consisted the progress of natural-history-classification? In the abandonment of grouping by external, conspicuous characters; and in the making of certain internal, but all-essential characters, the bases of groups. Whales are not now ranged along with fish, because in their general forms and habits of life they resemble fish; but they are ranged with mammals, because the type of their organization, as ascertained by dissection, corresponds with that of mammals. No longer considered as sea-weeds in virtue of their forms and modes of growth, zoophytes are now shown, by examination of their economy, to belong to the animal kingdom. It is found, then, that the discovery of real relationships involves analysis. It has turned out that the earlier classifications, guided by general resemblances, though containing much truth, and though very useful provisionally, were yet in many cases radically wrong; and that the true affinities of organisms, and the true homologies of

their parts, are to be made out only by examining their hidden structures. Another fact of great significance in the history of classification is also to be noted. Very frequently the kinship of an organism cannot be made out even by exhaustive analysis, if that analysis is confined to the adult structure. In many cases it is needful to examine the structure in its earlier stages; and even in its embryonic stage. So difficult was it, for instance, to determine the true position of the Cirrhipedia among animals, by examining mature individuals only, that Cuvier erroneously classed them with Mollusca, even after dissecting them; and not until their early forms were discovered, were they clearly proved to belong to the Crustacea. So important, indeed, is the study of development as a means to classification, that the first zoologists now hold it to be the only absolute criterion.

Here, then, in the advance of natural-history-classification, are two fundamental facts, which should be borne in mind when classifying the emotions. If, as Mr. Bain rightly assumes, the emotions are to be grouped after the natural-history-method; then it should be the natural-history-method in its complete form, and not in its rude form. Mr. Bain will doubtless agree in the position, that a correct account of the emotions in their natures and relations, must correspond with a correct account of the nervous system—must form another side of the same ultimate facts. Structure and function must necessarily harmonize. Structures which have with each other certain ultimate connexions, must have functions that have answering connexions. Structures that have arisen in certain ways, must have functions that have arisen in parallel ways. And hence if analysis and development are needful for the right interpretation of structures, they must be needful for the right interpretation of functions. Just as a scientific description of the digestive organs, must include not only their obvious forms and connexions, but their microscopic characters, and also the ways in which they

severally result by differentiation from the primitive mucous membrane; so must a scientific account of the nervous system, include its general arrangements, its minute structure, and its mode of evolution; and so must a scientific account of nervous actions, include the answering three elements. Alike in classing separate organisms, and in classing the parts of the same organism, the complete natural-history-method involves ultimate analysis, aided by development; and Mr. Bain, in not basing his classification of the emotions on characters reached through these aids, has fallen short of the conception with which he set out.

“But,” it will perhaps be asked, “how are the emotions to be analyzed, and their modes of evolution to be ascertained? Different animals, and different organs of the same animal, may readily be compared in their internal and microscopic structures, as also in their developments; but functions, and especially such functions as the emotions, do not admit of like comparisons.”

It must be admitted that the application of these methods is here by no means so easy. Though we can note differences and similarities between the internal formations of two animals; it is difficult to contrast the mental states of two animals. Though the true morphological relations of organs may be made out by the observation of embryos; yet, where such organs are inactive before birth, we cannot completely trace the history of their actions. Obviously, too, the pursuance of inquiries of the kind indicated, raises questions which science is not yet prepared to answer; as, for instance—Whether all nervous functions, in common with all other functions, arise by gradual differentiations, as their organs do? Whether the emotions are, therefore, to be regarded as divergent modes of action, that have become unlike by successive modifications? Whether, as two organs which originally budded out of the same membrane, have not only become different as they developed, but have also severally become compound internally, though externally simple; so

two emotions, simple and near akin in their roots, may not only have grown unlike, but may also have grown involved in their natures, though seeming homogeneous to consciousness. And here, indeed, in the inability of existing science to answer these questions which underlie a true psychological classification, we see how purely provisional any present classification is likely to be.

Nevertheless, even now, classification may be aided by development and ultimate analysis to a considerable extent; and the defect in Mr. Bain's work is, that he has not systematically availed himself of them as far as possible. Thus we may, in the first place, study the evolution of the emotions up through the various grades of the animal kingdom: observing which of them are earliest and exist with the lowest organization and intelligence; in what order the others accompany higher endowments; and how they are severally related to the conditions of life. In the second place, we may note the emotional differences between the lower and the higher human races—may regard as earlier and simpler those feelings which are common to both, and as later and more compound those which are characteristic of the most civilized. In the third place, we may observe the order in which the emotions unfold during the progress from infancy to maturity. And lastly, comparing these three kinds of emotional development, displayed in the ascending grades of the animal kingdom, in the advance of the civilized races, and in individual history, we may see in what respects they harmonize, and what are the implied general truths.

Having gathered together and generalized these several classes of facts, analysis of the emotions would be made easier. Setting out with the unquestionable assumption, that every new form of emotion making its appearance in the individual or the race, is a modification of some pre-existing emotion, or a compounding of several pre-existing emotions; we should be greatly aided by knowing what always are the pre-existing emotions. When, for example, we find that very few

if any of the lower animals show any love of accumulation, and that this feeling is absent in infancy—when we see that an infant in arms exhibits anger, fear, wonder, while yet it manifests no desire of permanent possession, and that a brute which has no acquisitive emotion can nevertheless feel attachment, jealousy, love of approbation; we may suspect that the feeling which property satisfies, is compounded out of simpler and deeper feelings. We may conclude that as, when a dog hides a bone, there must exist in him a prospective gratification of hunger; so there must similarly at first, in all cases where anything is secured or taken possession of, exist an ideal excitement of the feeling which that thing will gratify. We may further conclude that when the intelligence is such that a variety of objects come to be utilized for different purposes—when, as among savages, divers wants are satisfied through the articles appropriated for weapons, shelter, clothing, ornament; the act of appropriating comes to be one constantly involving agreeable associations, and one which is therefore pleasurable, irrespective of the end subserved. And when, as in civilized life, the property acquired is of a kind not conducing to one order of gratification in particular, but is capable of administering to all gratifications, the pleasure of acquiring property grows more distinct from each of the various pleasures subserved—is more completely differentiated into a separate emotion.

This illustration, roughly as it is sketched, will show what we mean by the use of comparative psychology in aid of classification. Ascertaining by induction the actual order of evolution of the emotions, we are led to suspect this to be their order of successive dependence; and are so led to recognize their order of ascending complexity; and by consequence their true groupings.

Thus, in the very process of arranging the emotions into grades, beginning with those involved in the lowest forms of conscious activity and ending with those peculiar to the adult civilized man, the way is opened for that ultimate

analysis which alone can lead us to the true science of the matter. For when we find both that there exist in a man feelings which do not exist in a child, and that the European is characterized by some sentiments which are wholly or in great part absent from the savage—when we see that, besides the new emotions that arise spontaneously as the individual becomes completely organized, there are new emotions making their appearance in the more advanced divisions of our race; we are led to ask—How are new emotions generated? The lowest savages have not even the ideas of justice or mercy: they have neither words for them nor can they be made to conceive them; and the manifestation of them by Europeans they ascribe to fear or cunning. There are æsthetic emotions common among ourselves, that are scarcely in any degree experienced by some inferior races; as, for instance, those produced by music. To which instances may be added the less marked but more numerous contrasts that exist between civilized races in the degrees of their several emotions. And if it is manifest, both that all the emotions are capable of being permanently modified in the course of successive generations, and that what must be classed as new emotions may be brought into existence; then it follows that nothing like a true conception of the emotions is to be obtained, until we understand how they are evolved.

Comparative psychology, while it raises this inquiry, prepares the way for answering it. When observing the differences between races, we can scarcely fail to observe also how these differences correspond with differences in their conditions of existence, and therefore in their daily experiences. Note the contrasts between the circumstances and between the emotional natures of savage and civilized. Among the lowest races of men, love of property stimulates to the obtainment only of such things as satisfy immediate desires, or desires of the immediate future. Improvidence is the rule: there is little effort to meet remote contingencies. But the

growth of established societies, having gradually given security of possession, there has been an increasing tendency to provide for coming years: there has been a constant exercise of the feeling which is satisfied by a provision for the future; and there has been a growth of this feeling so great that it now prompts accumulation to an extent beyond what is needful. Note, again, that under the discipline of social life—under a comparative abstinence from aggressive actions, and a performance of those mutually-serviceable actions implied by the division of labour—there has been a development of those gentle emotions of which inferior races exhibit but the rudiments. Savages delight in giving pain rather than pleasure—are almost devoid of sympathy. While among ourselves philanthropy organizes itself in laws, establishes numerous institutions, and dictates countless private benefactions.

From which and other like facts, does it not seem an unavoidable inference that new emotions are developed by new experiences—new habits of life? All are familiar with the truth, that in the individual, each feeling may be strengthened by performing those actions which it prompts; and to say that the feeling is *strengthened*, is to say that it is in part *made* by these actions. We know further, that not unfrequently, individuals, by persistence in special courses of conduct, acquire special likings for such courses, disagreeable as these may be to others; and these whims, or morbid tastes, imply incipient emotions corresponding to these special activities. We know that emotional characteristics, in common with all others, are hereditary; and the differences between civilized nations descended from the same stock, show us the cumulative results of small modifications hereditarily transmitted. And when we see that between savage and civilized races, which diverged from each other in the remote past, and have for a hundred generations followed modes of life becoming ever more unlike, there exist still greater emotional contrasts; may we not infer that the more or less distinct emotions which characterize civilized races, are the orga-



nized results of certain daily-repeated combinations of mental states which social life involves? Must we not say that habits not only modify emotions in the individual, and not only beget tendencies to like habits and accompanying emotions in descendants, but that when the conditions of the race make the habits persistent, this progressive modification may go on to the extent of producing emotions so far distinct as to seem new? And if so, we may suspect that such new emotions, and by implication all emotions analytically considered, consist of aggregated and consolidated groups of those simpler feelings which habitually occur together in experience: that they result from combined experiences, and are constituted of them. When, in the circumstances of any race, some one kind of action or set of actions, sensation or set of sensations, is usually followed, or accompanied by, various other sets of actions or sensations, and so entails a large mass of pleasurable or painful states of consciousness; these, by frequent repetition, become so connected together that the initial action or sensation brings the ideas of all the rest crowding into consciousness: producing, in a degree, the pleasures or pains that have before been felt in reality. And when this relation, besides being frequently repeated in the individual, occurs in successive generations, all the many nervous actions involved tend to grow organically connected. They become incipiently reflex; and on the occurrence of the appropriate stimulus, the whole nervous apparatus which in past generations was brought into activity by this stimulus, becomes nascently excited. Even while yet there have been no individual experiences, a vague feeling of pleasure or pain is produced; constituting what we may call the body of the emotion. And when the experiences of past generations come to be repeated in the individual, the emotion gains both strength and definiteness; and is accompanied by the appropriate specific ideas.

This view of the matter, which we believe the established truths of Physiology and Psychology unite in indicating, and

which is the view that generalizes the phenomena of habit, of national characteristics, of civilization in its moral aspects, at the same time that it gives us a conception of emotion in its origin and ultimate nature, may be illustrated from the mental modifications undergone by animals. It is well-known that on newly-discovered lands not inhabited by man, birds are so devoid of fear as to allow themselves to be knocked over with sticks; but that in the course of generations, they acquire such a dread of man as to fly on his approach; and that this dread is manifested by young as well as old. Now unless this change be ascribed to the killing-off of the least fearful, and the preservation and multiplication of the more fearful, which, considering the comparatively small number killed by man, is an inadequate cause; it must be ascribed to accumulated experiences; and each experience must be held to have a share in producing it. We must conclude that in each bird that escapes with injuries inflicted by man, or is alarmed by the outcries of other members of the flock (gregarious creatures of any intelligence being necessarily more or less sympathetic), there is established an association of ideas between the human aspect and the pains, direct and indirect, suffered from human agency. And we must further conclude, that the state of consciousness which impels the bird to take flight, is at first nothing more than an ideal reproduction of those painful impressions which before followed man's approach; that such ideal reproduction becomes more vivid and more massive as the painful experiences, direct or sympathetic, increase; and that thus the emotion in its incipient state, is nothing else than an aggregation of the revived pains before experienced. As, in the course of generations, the young birds of this race begin to display a fear of man before yet they have been injured by him; it is an unavoidable inference that the nervous system of the race has been organically modified by these experiences: we have no choice but to conclude that when a young bird is thus led to fly, it is because the impression produced on its senses by

the approaching man, entails, through an incipiently-reflex action, a partial excitement of all those nerves which in its ancestors had been excited under the like conditions; that this partial excitement has its accompanying painful consciousness; and that the vague painful consciousness thus arising, constitutes emotion proper—*emotion undecomposable into specific experiences, and therefore seemingly homogeneous.*

If such be the explanation of the fact in this case, then it is in all cases. If emotion is so generated here, then it is so generated throughout. We must perforce conclude that the emotional modifications displayed by different nations, and those higher emotions by which civilized are distinguished from savage, are to be accounted for on the same principle. And concluding this, we are led strongly to suspect that the emotions in general have severally thus originated.

Perhaps we have now made sufficiently clear what we mean by the study of the emotions through analysis and development. We have aimed to justify the positions that, without analysis aided by development, there cannot be a true natural history of the emotions; and that a natural history of the emotions based on external characters, can be but provisional. We think that Mr. Bain, in confining himself to an account of the emotions as they exist in the adult civilized man, has neglected those classes of facts out of which the science of the matter must chiefly be built. It is true that he has treated of habits as modifying emotions in the individual; but he has not recognized the fact, that where conditions render habits persistent in successive generations, such modifications are cumulative: he has not hinted that the modifications produced by habit are emotions in the making. It is true, also, that he occasionally refers to the characteristics of children; but he does not systematically trace the changes through which childhood passes into manhood, as throwing light on the order and genesis of the emotions. It is further true that he here and there refers to national traits in illustration of his subject; but these stand as isolated facts, having no

general significance: there is no hint of any relation between them and the national circumstances; while all those many moral contrasts between lower and higher races which throw great light on classification, are passed over. And once more, it is true that many passages of his work, and sometimes, indeed, whole sections of it, are analytical; but his analyses are incidental—they do not underlie his entire scheme, but are here and there added to it. In brief, he has written a Descriptive Psychology, which does not appeal to Comparative Psychology and Analytical Psychology for its leading ideas. And in doing this, he has omitted much that should be included in a natural history of the mind; while to that part of the subject with which he has dealt, he has given a necessarily-imperfect organization.

Even leaving out of view the absence of those methods and criteria on which we have been insisting, it appears to us that meritorious as is Mr. Bain's book in its details, it is defective in some of its leading ideas. The first paragraphs of his first chapter, quite startled us by the strangeness of their definitions—a strangeness which can scarcely be ascribed to laxity of expression. The paragraphs run thus:—

“Mind is comprised under three heads—Emotion, Volition, and Intellect.

“EMOTION is the name here used to comprehend all that is understood by feelings, states of feeling, pleasures, pains, passions, sentiments, affections. Consciousness, and conscious states also for the most part denote modes of emotion, although there is such a thing as the Intellectual consciousness.

“VOLITION, on the other hand, indicates the great fact that our Pleasures and Pains, which are not the whole of our emotions, prompt to action, or stimulate the active machinery of the living framework to perform such operations as procure the first and abate the last. To withdraw from a scalding heat and cling to a gentle warmth, are exercises of volition.”

The last of these definitions, which we may most conveniently take first, seems to us very faulty. We cannot but

feel astonished that Mr. Bain, familiar as he is with the phenomena of reflex action, should have so expressed himself as to include a great part of them along with the phenomena of volition. He seems to be ignoring the discriminations of modern science, and returning to the vague conceptions of the past—nay more, he is comprehending under volition what even the popular speech would hardly bring under it. If you were to blame any one for snatching his foot from the scalding water into which he had inadvertently put it, he would tell you that he could not help it; and his reply would be indorsed by the general experience, that the withdrawal of a limb from contact with something extremely hot, is quite involuntary—that it takes place not only without volition, but in defiance of an effort of will to maintain the contact. How, then, can that be instanced as an example of volition, which occurs even when volition is antagonistic? We are quite aware that it is impossible to draw any absolute line of demarcation between automatic actions and actions which are not automatic. Doubtless we may pass gradually from the purely reflex, through the consensual, to the voluntary. Taking the case Mr. Bain cites, it is manifest that from a heat of such moderate degree that the withdrawal from it is wholly voluntary, we may advance by infinitesimal steps to a heat which compels involuntary withdrawal; and that there is a stage at which the voluntary and involuntary actions are mixed. But the difficulty of absolute discrimination is no reason for neglecting the broad general contrast; any more than it is for confounding light with darkness. If we are to include as examples of volition, all cases in which pleasures and pains “stimulate the active machinery of the living framework to perform such operations as procure the first and abate the last,” then we must consider sneezing and coughing as examples of volition; and Mr. Bain surely cannot mean this. Indeed, we must confess ourselves at a loss. On the one hand if he does not mean it, his expression is lax to a degree that surprizes us in so careful a writer. On the other

hand, if he does mean it, we cannot understand his point of view.

A parallel criticism applies to his definition of Emotion. Here, too, he has departed from the ordinary acceptance of the word; and, as we think, in the wrong direction. Whatever may be the interpretation that is justified by its derivation, the word Emotion has come generally to mean that kind of feeling which is not a direct result of any action on the organism; but is either an indirect result of such action, or arises quite apart from such action. It is used to indicate those sentient states which are independently generated in consciousness; as distinguished from those generated in our corporeal framework, and known as sensations. Now this distinction, tacitly made in common speech, is one which Psychology cannot well reject; but one which it must adopt, and to which it must give scientific precision. Mr. Bain, however, appears to ignore any such distinction. Under the term "emotion," he includes not only passions, sentiments, affections, but all "feelings, states of feeling, pleasures, pains,"—that is, all sensations. This does not appear to be a mere lapse of expression; for when, in the opening sentence, he asserts that "mind is comprised under the three heads—Emotion, Volition, and Intellect," he of necessity implies that sensation is included under one of these heads; and as it cannot be included under Volition or Intellect, it must be classed with Emotion: as it clearly is in the next sentence.

We cannot but think this a retrograde step. Though distinctions which have been established in popular thought and language, are not unfrequently merged in the higher generalizations of science (as, for instance, when crabs and worms are grouped together in the sub-kingdom *Annulosa*); yet science very generally recognizes the validity of these distinctions, as real though not fundamental. And so in the present case. Such community as analysis discloses between sensation and emotion, must not shut out the broad contrast that exists between them. If there needs a wider word, as

there does, to signify any sentient state whatever; then we may fitly adopt for this purpose the word currently so used, namely, "Feeling." And considering as Feelings all that great division of mental states which we do not class as Cognitions, may then separate this great division into the two orders, Sensations and Emotions.

And here we may, before concluding, briefly indicate the leading outlines of a classification which reduces this distinction to a scientific form, and develops it somewhat further—a classification which, while suggested by certain fundamental traits reached without a very lengthened inquiry, is yet, we believe, in harmony with that disclosed by detailed analysis.

Leaving out of view the Will, which is a simple homogeneous mental state, forming the link between feeling and action, and not admitting of subdivisions; our states of consciousness fall into two great classes—COGNITIONS and FEELINGS.

COGNITIONS, or those modes of mind in which we are occupied with the *relations* that subsist among our feelings, are divisible into four great sub-classes.

*Presentative cognitions*; or those in which consciousness is occupied in localizing a sensation impressed on the organism—occupied, that is, with the relation between this presented mental state and those other presented mental states which make up our consciousness of the part affected: as when we cut ourselves.

*Presentative-representative cognitions*; or those in which consciousness is occupied with the relation between a sensation or group of sensations and the representations of those various other sensations that accompany it in experience. This is what we commonly call perception—an act in which, along with certain impressions presented to consciousness, there arise in consciousness the ideas of certain other impressions ordinarily connected with the presented ones: as when its visible form and colour, lead us to mentally endow an orange with all its other attributes.

*Representative cognitions*; or those in which consciousness is occupied with the relations among ideas or represented sensations: as in all acts of recollection.

*Re-representative cognitions*; or those in which the occupation of consciousness is not by representations of special relations, that have before been presented to consciousness; but those in which such represented special relations are thought of merely as comprehended in a general relation—those in which the concrete relations once experienced, in so far as they become objects of consciousness at all, are incidentally represented, along with the abstract relation which formulates them. The ideas resulting from this abstraction, do not themselves represent actual experiences; but are symbols which stand for groups of such actual experiences—represent aggregates of representations. And thus they may be called re-representative cognitions. It is clear that the process of re-representation is carried to higher stages, as the thought becomes more abstract.

FEELINGS, or those modes of mind in which we are occupied, not with the relations subsisting between our sentient states, but with the sentient states themselves, are divisible into four parallel sub-classes.

*Presentative feelings*, ordinarily called sensations, are those mental states in which, instead of regarding a corporeal impression as of this or that kind, or as located here or there, we contemplate it in itself as pleasure or pain: as when eating.

*Presentative-representative feelings*, embracing a great part of what we commonly call emotions, are those in which a sensation, or group of sensations, or group of sensations and ideas, arouses a vast aggregation of represented sensations; partly of individual experience, but chiefly deeper than individual experience, and, consequently, indefinite. The emotion of terror may serve as an example. Along with certain impressions made on the eyes or ears, or both, are recalled into consciousness many of the pains to which such impres-



sions have before been the antecedents ; and when the relation between such impressions and such pains has been habitual in the race, the definite ideas of such pains which individual experience has given, are accompanied by the indefinite pains that result from inherited experience—vague feelings which we may call organic representations. In an infant, crying at a strange sight or sound while yet in the nurse's arms, we see these organic representations called into existence in the shape of dim discomfort, to which individual experience has yet given no specific outlines.

*Representative feelings*, comprehending the ideas of the feelings above classed, when they are called up apart from the appropriate external excitements. As instances of these may be named the feelings with which the descriptive poet writes, and which are aroused in the minds of his readers.

*Re-representative feelings*, under which head are included those more complex sentient states that are less the direct results of external excitements than the indirect or reflex results of them. The love of property is a feeling of this kind. It is awakened not by the presence of any special object, but by ownable objects at large ; and it is not from the mere presence of such objects, but from a certain ideal relation to them, that it arises. As before shown (p. 130) it consists, not of the represented advantages of possessing this or that, but of the represented advantages of possession in general—is not made up of certain concrete representations, but of the abstracts of many concrete representations ; and so is re-representative. The higher sentiments, as that of justice, are still more completely of this nature. Here the sentient state is compounded out of sentient states that are themselves wholly, or almost wholly, re-representative : it involves representations of those lower emotions which are produced by the possession of property, by freedom of action, etc. ; and thus is re-representative in a higher degree.

This classification, here roughly indicated and capable of further expansion, will be found in harmony with the results

of detailed analysis aided by development. Whether we trace mental progression through the grades of the animal kingdom, through the grades of mankind, or through the stages of individual growth; it is obvious that the advance, alike in cognitions and feelings, is, and must be, from the presentative to the more and more remotely representative. It is undeniable that intelligence ascends from those simple perceptions in which consciousness is occupied in localizing and classifying sensations, to perceptions more and more compound, to simple reasoning, to reasoning more and more complex and abstract—more and more remote from sensation. And in the evolution of feelings, there is a parallel series of steps. Simple sensations; sensations combined together; sensations combined with represented sensations; represented sensations organized into groups, in which their separate characters are very much merged; representations of these representative groups, in which the original components have become still more vague. In both cases, the progress has necessarily been from the simple and concrete to the complex and abstract; and as with the cognitions, so with the feelings, this must be the basis of classification.

The space here occupied with criticisms on Mr. Bain's work, we might have filled with exposition and eulogy, had we thought this the more important. Though we have freely pointed out what we conceive to be its defects, let it not be inferred that we question its great merits. We repeat that, as a natural history of the mind, we believe it to be the best yet produced. It is a most valuable collection of carefully-elaborated materials. Perhaps we cannot better express our sense of its worth, than by saying that, to those who hereafter give to this branch of Psychology a thoroughly scientific organization, Mr. Bain's book will be indispensable.

## THE SOCIAL ORGANISM.

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SIR JAMES MACINTOSH got great credit for the saying, that "constitutions are not made, but grow." In our day, the most significant thing about this saying is, that it was ever thought so significant. As from the surprise displayed by a man at some familiar fact, you may judge of his general culture; so from the admiration which an age accords to a new thought, its average degree of enlightenment may be inferred. That this apophthegm of Macintosh should have been quoted and re-quoted as it has, shows how profound has been the ignorance of social science. A small ray of truth has seemed brilliant, as a distant rushlight looks like a star in the surrounding darkness.

Such a conception could not, indeed, fail to be startling when let fall in the midst of a system of thought to which it was utterly alien. Universally in Macintosh's day, things were explained on the hypothesis of manufacture, rather than that of growth: as indeed they are, by the majority, in our own day. It was held that the planets were severally projected round the sun from the Creator's hand; with exactly the velocity required to balance the sun's attraction. The formation of the Earth, the separation of sea from land, the production of animals, were mechanical works from which God rested as a labourer rests. Man was supposed to be moulded after a manner somewhat akin to that in which a modeller makes a clay-figure. And of course, in harmony with such ideas, societies were tacitly assumed to be arranged thus or thus by direct interposition of Providence; or by the regulations of law-makers; or by both.

Yet that societies are not artificially put together, is a truth so manifest, that it seems wonderful men should have ever overlooked it. Perhaps nothing more clearly shows the small value of historical studies, as they have been commonly pursued. You need but to look at the changes going on around, or observe social organization in its leading peculiarities, to see that these are neither supernatural, nor are determined by the wills of individual men, as by implication historians commonly teach; but are consequent on general natural causes. The one case of the division of labour suffices to show this. It has not been by command of any ruler that some men have become manufacturers, while others have remained cultivators of the soil. In Lancashire, millions have devoted themselves to the making of cotton-fabrics; in Yorkshire, another million lives by producing woollens; and the pottery of Staffordshire, the cutlery of Sheffield, the hardware of Birmingham, severally occupy their hundreds of thousands. These are large facts in the structure of English society; but we can ascribe them neither to miracle, nor to legislation. It is not by "the hero as king," any more than by "collective wisdom," that men have been segregated into producers, wholesale distributors, and retail distributors. The whole of our industrial organization, from its main outlines down to its minutest details, has become what it is, not simply without legislative guidance, but, to a considerable extent, in spite of legislative hindrances. It has arisen under the pressure of human wants and activities. While each citizen has been pursuing his individual welfare, and none taking thought about division of labour, or, indeed, conscious of the need for it, division of labour has yet been ever becoming more complete. It has been doing this slowly and silently: scarcely any having observed it until quite modern times. By steps so small, that year after year the industrial arrangements have seemed to men just what they were before — by changes as insensible as those through which a seed passes into a tree; society has become the complex body of

mutually-dependent workers which we now see. And this economic organization, mark, is the all-essential organization. Through the combination thus spontaneously evolved, every citizen is supplied with daily necessities; while he yields some product or aid to others. That we are severally alive to-day, we owe to the regular working of this combination during the past week; and could it be suddenly abolished, a great proportion of us would be dead before another week ended. If these most conspicuous and vital arrangements of our social structure, have arisen without the devising of any one, but through the individual efforts of citizens to satisfy their own wants; we may be tolerably certain that the less important arrangements have similarly arisen.

“But surely,” it will be said, “the social changes directly produced by law, cannot be classed as spontaneous growths. When parliaments or kings order this or that thing to be done, and appoint officials to do it, the process is clearly artificial; and society to this extent becomes a manufacture rather than a growth.” No, not even these changes are exceptions, if they be real and permanent changes. The true sources of such changes lie deeper than the acts of legislators. To take first the simplest instance. We all know that the enactments of representative governments ultimately depend on the national will: they may for a time be out of harmony with it, but eventually they must conform to it. And to say that the national will finally determines them, is to say that they result from the average of individual desires; or, in other words—from the average of individual natures. A law so initiated, therefore, really grows out of the popular character. In the case of a Government representing a dominant class, the same thing holds, though not so manifestly. For the very existence of a class monopolizing all power, is due to certain sentiments in the commonalty. But for the feeling of loyalty on the part of retainers, a feudal system could not exist. We see in the protest of the Highlanders against the abolition of heritable jurisdictions, that

they preferred that kind of local rule. And if to the popular nature, must thus be ascribed the growth of an irresponsible ruling class; then to the popular nature must be ascribed the social arrangements which that class creates in the pursuit of its own ends. Even where the Government is despotic, the doctrine still holds. The character of the people is, as before, the original source of this political form; and, as we have abundant proof, other forms suddenly created will not act, but rapidly retrograde to the old form. Moreover, such regulations as a despot makes, if really operative, are so because of their fitness to the social state. His acts being very much swayed by general opinion—by precedent, by the feeling of his nobles, his priesthood, his army—are in part immediate results of the national character; and when they are out of harmony with the national character, they are soon practically abrogated. The failure of Cromwell permanently to establish a new social condition, and the rapid revival of suppressed institutions and practices after his death, show how powerless is a monarch to change the type of the society he governs. He may disturb, he may retard, or he may aid the natural process of organization; but the general course of this process is beyond his control. Nay, more than this is true. Those who regard the histories of societies as the histories of their great men, and think that these great men shape the fates of their societies, overlook the truth that such great men are the products of their societies. Without certain antecedents—without a certain average national character, they could neither have been generated nor could have had the culture which formed them. If their society is to some extent re-moulded by them, they were, both before and after birth, moulded by their society—were the results of all those influences which fostered the ancestral character they inherited, and gave their own early bias, their creed, morals, knowledge, aspirations. So that such social changes as are immediately traceable to individuals of unusual power, are still remotely traceable to the social causes which produced

these individuals; and hence, from the highest point of view, such social changes also, are parts of the general developmental process.

Thus that which is so obviously true of the industrial structure of society, is true of its whole structure. The fact that "constitutions are not made, but grow," is simply a fragment of the much larger fact, that under all its aspects and through all its ramifications, society is a growth and not a manufacture.

A perception that there exists some analogy between the body politic and a living individual body, was early reached; and from time to time re-appeared in literature. But this perception was necessarily vague and more or less fanciful. In the absence of physiological science, and especially of those comprehensive generalizations which it has but recently reached, it was impossible to discern the real parallelisms.

The central idea of Plato's model Republic, is the correspondence between the parts of a society and the faculties of the human mind. Classifying these faculties under the heads of Reason, Will, and Passion, he classifies the members of his ideal society under what he regards as three analogous heads:—councillors, who are to exercise government; military or executive, who are to fulfil their behests; and the commonalty, bent on gain and selfish gratification. In other words, the ruler, the warrior, and the craftsman, are, according to him, the analogues of our reflective, volitional, and emotional powers. Now even were there truth in the implied assumption of a parallelism between the structure of a society and that of a man, this classification would be indefensible. It might more truly be contended that, as the military power obeys the commands of the Government, it is the Government which answers to the Will; while the military power is simply an agency set in motion by it. Or, again, it might be contended that whereas the Will is a product of predominant desires, to which the Reason serves merely as an

eye, it is the craftsmen, who, according to the alleged analogy, ought to be the moving power of the warriors.

Hobbes sought to establish a still more definite parallelism: not, however, between a society and the human mind, but between a society and the human body. In the introduction to the work in which he develops this conception, he says—

“For by art is created that great LEVIATHAN called a COMMONWEALTH, or STATE, in Latin CIVITAS, which is but an artificial man; though of greater stature and strength than the natural, for whose protection and defence it was intended, and in which the *sovereignty* is an artificial *soul*, as giving life and motion to the whole body; the *magistrates* and other *officers* of judicature and execution, artificial *joints*; *reward* and *punishment*, by which, fastened to the seat of the sovereignty, every joint and member is moved to perform his duty, are the *nerves*, that do the same in the body natural; the *wealth* and *riches* of all the particular members are the *strength*; *salus populi*, the *people's safety*, its *business*; *counsellors*, by whom all things needful for it to know are suggested unto it, are the *memory*; *equity* and *laws* an artificial *reason* and *will*; *concord*, *health*; *sedition*, *sickness*; *civil war*, *death*.”

And Hobbes carries this comparison so far as actually to give a drawing of the Leviathan—a vast human-shaped figure, whose body and limbs are made up of multitudes of men. Just noting that these different analogies asserted by Plato and Hobbes, serve to cancel each other (being, as they are, so completely at variance), we may say that on the whole those of Hobbes are the more plausible. But they are full of inconsistencies. If the sovereignty is the *soul* of the body politic, how can it be that magistrates, who are a kind of deputy-sovereigns, should be comparable to *joints*? Or, again, how can the three mental functions, memory, reason, and will, be severally analogous, the first to counsellors, who are a class of public officers, and the other two to equity and laws, which are not classes of officers, but abstractions? Or, once more, if magistrates are the artificial joints of society, how can reward and punishment be its nerves? Its nerves must surely be some class of persons. Reward and punish-



ment must in societies, as in individuals, be *conditions* of the nerves, and not the nerves themselves.

But the chief errors of these comparisons made by Plato and Hobbes, lie much deeper. Both thinkers assume that the organization of a society is comparable, not simply to the organization of a living body in general, but to the organization of the human body in particular. There is no warrant whatever for assuming this. It is in no way implied by the evidence; and is simply one of those fancies which we commonly find mixed up with the truths of early speculation. Still more erroneous are the two conceptions in this, that they construe a society as an artificial structure. Plato's model republic—his ideal of a healthful body politic—is to be consciously put together by men; just as a watch might be: and Plato manifestly thinks of societies in general as thus originated. Quite specifically does Hobbes express this view. "For by *art*," he says, "is created that great LEVIATHAN called a COMMONWEALTH." And he even goes so far as to compare the supposed social contract, from which a society suddenly originates, to the creation of a man by the divine fiat. Thus they both fall into the extreme inconsistency of considering a community as similar in structure to a human being, and yet as produced in the same way as an artificial mechanism—in nature, an organism; in history, a machine.

Notwithstanding errors, however, these speculations have considerable significance. That such analogies, crudely as they are thought out, should have been alleged by Plato and Hobbes and many others, is a reason for suspecting that *some* analogy exists. The untenableness of the particular comparisons above instanced, is no ground for denying an essential parallelism; for early ideas are usually but vague adumbrations of the truth. Lacking the great generalizations of biology, it was, as we have said, impossible to trace out the real relations of social organizations to organizations of another order. We propose here to show what are the analogies which modern science discloses to us.

Let us set out by succinctly stating the points of similarity and the points of difference. Societies agree with individual organisms in four conspicuous peculiarities:—

1. That commencing as small aggregations, they insensibly augment in mass: some of them eventually reaching ten thousand times what they originally were.

2. That while at first so simple in structure as to be considered structureless, they assume, in the course of their growth, a continually-increasing complexity of structure.

3. That though in their early, undeveloped states, there exists in them scarcely any mutual dependence of parts, their parts gradually acquire a mutual dependence; which becomes at last so great, that the activity and life of each part is made possible only by the activity and life of the rest.

4. That the life and development of a society is independent of, and far more prolonged than, the life and development of any of its component units; who are severally born, grow, work, reproduce, and die, while the body politic composed of them survives generation after generation, increasing in mass, completeness of structure, and functional activity.

These four parallelisms will appear the more significant the more we contemplate them. While the points specified, are points in which societies agree with individual organisms, they are points in which individual organisms agree with each other, and disagree with all things else. In the course of its existence, every plant and animal increases in mass, in a way not paralleled by inorganic objects: even such inorganic objects as crystals, which arise by growth, show us no such definite relation between growth and existence as organisms do. The orderly progress from simplicity to complexity, displayed by bodies politic in common with all living bodies, is a characteristic which distinguishes living bodies from the inanimate bodies amid which they move. That functional dependence of parts, which is scarcely more manifest in animals or plants than nations, has no counterpart elsewhere.

And in no aggregate except an organic or a social one, is there a perpetual removal and replacement of parts, joined with a continued integrity of the whole. Moreover, societies and organisms are not only alike in these peculiarities, in which they are unlike all other things; but the highest societies, like the highest organisms, exhibit them in the greatest degree. We see that the lowest animals do not increase to anything like the sizes of the higher ones; and, similarly, we see that aboriginal societies are comparatively limited in their growths. In complexity, our large civilized nations as much exceed primitive savage tribes, as a vertebrate animal does a zoophyte. Simple communities, like simple creatures, have so little mutual dependence of parts, that subdivision or mutilation causes but little inconvenience; but from complex communities, as from complex creatures, you cannot remove any considerable organ without producing great disturbance or death of the rest. And in societies of low type, as in inferior animals, the life of the aggregate, often cut short by division or dissolution, exceeds in length the lives of the component units, very far less than in civilized communities and superior animals; which outlive many generations of their component units.

On the other hand, the leading differences between societies and individual organisms are these:—

1. That societies have no specific external forms. This, however, is a point of contrast which loses much of its importance, when we remember that throughout the vegetal kingdom, as well as in some lower divisions of the animal kingdom, the forms are often very indefinite—definiteness being rather the exception than the rule; and that they are manifestly in part determined by surrounding physical circumstances, as the forms of societies are. If, too, it should eventually be shown, as we believe it will, that the form of every species of organism has resulted from the average play of the external forces to which it has been subject during its evolution as a species; then, that the external forms of societies should depend, as

they do, on surrounding conditions, will be a further point of community.

2. That though the living tissue whereof an individual organism consists, forms a continuous mass, the living elements of a society do not form a continuous mass; but are more or less widely dispersed over some portion of the Earth's surface. This, which at first sight appears to be a fundamental distinction, is one which yet to a great extent disappears when we contemplate all the facts. For, in the lower divisions of the animal and vegetal kingdoms, there are types of organization much more nearly allied, in this respect, to the organization of a society, than might be supposed—types in which the living units essentially composing the mass, are dispersed through an inert substance, that can scarcely be called living in the full sense of the word. It is thus with some of the *Protococci* and with the *Nostocæ*, which exist as cells imbedded in a viscid matter. It is so, too, with the *Thalassicollæ*—bodies that are made up of differentiated parts, dispersed through an undifferentiated jelly. And throughout considerable portions of their bodies, some of the *Acalephæ* exhibit more or less distinctly this type of structure. Indeed, it may be contended that this is the primitive form of all organization; seeing that, even in the highest creatures, as in ourselves, every tissue develops out of what physiologists call a blastema—an unorganized though organizable substance, through which organic points are distributed. Now this is very much the case with a society. For we must remember that though the men who make up a society, are physically separate and even scattered; yet that the surface over which they are scattered is not one devoid of life, but is covered by life of a lower order which ministers to their life. The vegetation which clothes a country, makes possible the animal life in that country; and only through its animal and vegetal products can such a country support a human society. Hence the members of the body politic are not to be regarded as separated by intervals of dead space; but as diffused

through a space occupied by life of a lower order. In our conception of a social organism, we must include all that lower organic existence on which human existence, and therefore social existence, depends. And when we do this, we see that the citizens who make up a community, may be considered as highly vitalized units surrounded by substances of lower vitality, from which they draw their nutriment : much as in the cases above instanced. Thus, when examined, this apparent distinction in great part disappears.

3. That while the ultimate living elements of an individual organism, are mostly fixed in their relative positions, those of the social organism are capable of moving from place to place, seems a marked disagreement. But here, too, the disagreement is much less than would be supposed. For while citizens are locomotive in their private capacities, they are fixed in their public capacities. As farmers, manufacturers, or traders, men carry on their businesses at the same spots, often throughout their whole lives ; and if they go away occasionally, they leave behind others to discharge their functions in their absence. Each great centre of production, each manufacturing town or district, continues always in the same place ; and many of the firms in such town or district, are for generations carried on either by the descendants or successors of those who founded them. Just as in a living body, the cells that make up some important organ, severally perform their functions for a time and then disappear, leaving others to supply their places ; so, in each part of a society, the organ remains, though the persons who compose it change. Thus, in social life, as in the life of an animal, the units as well as the larger agencies formed of them, are in the main stationary as respects the places where they discharge their duties and obtain their sustenance. And hence the power of individual locomotion does not practically affect the analogy.

4. The last and perhaps the most important distinction, is, that while in the body of an animal, only a special tissue is endowed with feeling ; in a society, all the members are endowed

with feeling. Even this distinction, however, is by no means a complete one. For in some of the lowest animals, characterized by the absence of a nervous system, such sensitiveness as exists is possessed by all parts. It is only in the more organized forms that feeling is monopolized by one class of the vital elements. Moreover, we must remember that societies, too, are not without a certain differentiation of this kind. Though the units of a community are all sensitive, yet they are so in unequal degrees. The classes engaged in agriculture and laborious occupations in general, are much less susceptible, intellectually and emotionally, than the rest; and especially less so than the classes of highest mental culture. Still, we have here a tolerably decided contrast between bodies politic and individual bodies. And it is one which we should keep constantly in view. For it reminds us that while in individual bodies, the welfare of all other parts is rightly subservient to the welfare of the nervous system, whose pleasurable or painful activities make up the good or evil of life; in bodies politic, the same thing does not hold, or holds to but a very slight extent. It is well that the lives of all parts of an animal should be merged in the life of the whole; because the whole has a corporate consciousness capable of happiness or misery. But it is not so with a society; since its living units do not and cannot lose individual consciousness; and since the community as a whole has no corporate consciousness. And this is an everlasting reason why the welfare of citizens cannot rightly be sacrificed to some supposed benefit of the State; but why, on the other hand, the State is to be maintained solely for the benefit of citizens. The corporate life must here be subservient to the lives of the parts; instead of the lives of the parts being subservient to the corporate life.

Such, then, are the points of analogy and the points of difference. May we not say that the points of difference serve but to bring into clearer light the points of analogy. While comparison makes definite the obvious contrasts be-

tween organisms commonly so called, and the social organism ; it shows that even these contrasts are not so decided as was to be expected. The indefiniteness of form, the discontinuity of the parts, the mobility of the parts, and the universal sensitiveness, are not only peculiarities of the social organism which have to be stated with considerable qualifications ; but they are peculiarities to which the inferior classes of animals present approximations. Thus we find but little to conflict with the all-important analogies. That societies slowly augment in mass ; that they progress in complexity of structure ; that at the same time their parts become more mutually dependent ; that their living units are removed and replaced without destroying their integrity ; and further, that the extents to which they display these peculiarities are proportionate to their vital activities ; are traits that societies have in common with organic bodies. And these traits in which they agree with organic bodies and disagree with all other things—these traits which in truth specially characterize organic bodies, entirely subordinate the minor distinctions : such distinctions being scarcely greater than those which separate one half of the organic kingdom from the other. The *principles* of organization are the same ; and the differences are simply differences of application.

Here ending this general survey of the facts which justify the comparison of a society to a living body ; let us look at them in detail. We shall find that the parallelism becomes the more marked the more closely it is traced.

The lowest animal and vegetal forms—*Protozoa* and *Proto-phyta*—are chiefly inhabitants of the water. They are minute bodies, most of which are made individually visible only by the microscope. All of them are extremely simple in structure ; and some of them, as the *Rhizopods*, almost structureless. Multiplying, as they ordinarily do, by the spontaneous division of their bodies, they produce halves, which may either become quite separate and move away in different directions,

or may continue attached. By the repetition of this process of fission, aggregations of various sizes and kinds are formed. Among the *Protophyta* we have some classes, as the *Diatomacee* and the Yeast-plant, in which the individuals may be either separate, or attached in groups of two, three, four, or more; other classes in which a considerable number of individual cells are united into a thread (*Conferva*, *Monilia*); others in which they form a network (*Hydrodictyon*); others in which they form plates (*Ulva*); and others in which they form masses (*Laminaria*, *Agaricus*): all which vegetal forms, having no distinction of root, stem, or leaf, are called *Thallogens*. Among the *Protozoa* we find parallel facts. Immense numbers of *Amaba*-like creatures, massed together in a framework of horny fibres, constitute Sponge. In the *Foraminifera*, we see smaller groups of such creatures arranged into more definite shapes. Not only do these almost structureless *Protozoa* unite into regular or irregular aggregations of various sizes; but among some of the more organized ones, as the *Vorticelle*, there are also produced clusters of individuals, proceeding from a common stock. But these little societies of monads, or cells, or whatever else we may call them, are societies only in the lowest sense: there is no subordination of parts among them—no organization. Each of the component units lives by and for itself; neither giving nor receiving aid. There is no mutual dependence, save that consequent on mere mechanical union.

Now do we not here discern analogies to the first stages of human societies. Among the lowest races, as the Bushmen, we find but incipient aggregation: sometimes single families; sometimes two or three families wandering about together. The number of associated units is small and variable; and their union inconstant. No division of labour exists except between the sexes; and the only kind of mutual aid is that of joint attack or defence. We see nothing beyond an undifferentiated group of individuals, forming the germ of a society; just as in the homogeneous groups of cells above



described, we see only the initial stage of animal and vegetal organization.

The comparison may now be carried a step higher. In the vegetal kingdom we pass from the *Thallogens*, consisting of mere masses of similar cells, to the *Aerogens*, in which the cells are not similar throughout the whole mass; but are here aggregated into a structure serving as leaf, and there into a structure serving as root: thus forming a whole in which there is a certain subdivision of functions among the units; and therefore a certain mutual dependence. In the animal kingdom we find analogous progress. From mere unorganized groups of cells, or cell-like bodies, we ascend to groups of such cells arranged into parts that have different duties. The common Polype, from whose substance may be separated individual cells which exhibit, when detached, appearances and movements like those of the solitary *Amæba*, illustrates this stage. The component units, though still showing great community of character, assume somewhat diverse functions in the skin, in the internal surface, and in the tentacles. There is a certain amount of "physiological division of labour."

Turning to societies, we find these stages paralleled in the majority of aboriginal tribes. When, instead of such small variable groups as are formed by Bushmen, we come to the larger and more permanent groups formed by savages not quite so low, we begin to find traces of social structure. Though industrial organization scarcely shows itself, except in the different occupations of the sexes; yet there is always more or less of governmental organization. While all the men are warriors and hunters, only a part of them are included in the council of chiefs; and in this council of chiefs some one has commonly supreme authority. There is thus a certain distinction of classes and powers; and through this slight specialization of functions, is effected a rude co-operation among the increasing mass of individuals, whenever the society has to act in its corporate capacity. Beyond this

analogy in the slight extent to which organization is carried, there is analogy in the indefiniteness of the organization. In the *Hydra*, the respective parts of the creature's substance have many functions in common. They are all contractile; omitting the tentacles, the whole of the external surface can give origin to young *hydrae*; and when turned inside out, stomach performs the duties of skin, and skin the duties of stomach. In aboriginal societies such differentiations as exist are similarly imperfect. Notwithstanding distinctions of rank, all persons maintain themselves by their own exertions. Not only do the head men of the tribe, in common with the rest, build their own huts, make their own weapons, kill their own food; but the chief does the like. Moreover, in the rudest of these tribes, such governmental organization as exists is very inconstant. It is frequently changed by violence or treachery, and the function of ruling assumed by other members of the community. Thus between the rudest societies, and some of the lowest forms of animal life, there is analogy alike in the slight extent to which organization is carried, in the indefiniteness of this organization, and in its want of fixity.

A further complication of the analogy is at hand. From the aggregation of units into organized groups, we pass to the multiplication of such groups, and their coalescence into compound groups. The *Hydra*, when it has reached a certain bulk, puts forth from its surface a bud, which, growing and gradually assuming the form of the parent, finally becomes detached; and by this process of gemmation, the creature peoples the adjacent water with others like itself. A parallel process is seen in the multiplication of those lowly-organized tribes above described. One of them having increased to a size that is either too great for co-ordination under so rude a structure, or else that is greater than the surrounding country can supply with game and other wild food, there arises a tendency to divide; and as in such communities there are ever occurring quarrels, jealousies, and

other causes of division, there soon comes an occasion on which a part of the tribe separates under the leadership of some subordinate chief, and migrates. This process being from time to time repeated, an extensive region is at length occupied with numerous separate tribes descended from a common ancestry. The analogy by no means ends here. Though in the common *Hydra*, the young ones that bud out from the parent soon become detached and independent; yet throughout the rest of the class *Hydrozoa*, to which this creature belongs, the like does not generally happen. The successive individuals thus developed continue attached; give origin to other such individuals which also continue attached; and so there results a compound animal. As in the *Hydra* itself, we find an aggregation of units which, considered separately, are akin to the lowest *Protozoa*; so here, in a *Zoophyte*, we find an aggregation of such aggregations. The like is also seen throughout the extensive family of *Polyzoa* or *Molluscoïda*. The Ascidian Mollusks, too, in their many varied forms, show us the same thing: exhibiting, at the same time, various degrees of union subsisting among the component individuals. For while in the *Salpe* the component individuals adhere so slightly that a blow on the vessel of water in which they are floating will separate them; in the *Botryllide* there exists a vascular connexion between them, and a common circulation. Now in these various forms and degrees of aggregation, may we not see paralleled the union of groups of connate tribes into nations? Though in regions where circumstances permit, the separate tribes descended from some original tribe, migrate in all directions, and become far removed and quite separate; yet, in other cases, where the territory presents barriers to distant migration, this does not happen: the small kindred communities are held in closer contact, and eventually become more or less united into a nation. The contrast between the tribes of American Indians and the Scottish clans, illustrates this. And a glance at our own early history, or the early histories of continental nations,

shows this fusion of small simple communities taking place in various ways and to various extents. As says M. Guizot, in his history of "The Origin of Representative Government,"—

"By degrees, in the midst of the chaos of the rising society, small aggregations are formed which feel the want of alliance and union with each other. . . . Soon inequality of strength is displayed among neighbouring aggregations. The strong tend to subjugate the weak, and usurp at first the rights of taxation and military service. Thus political authority leaves the aggregations which first instituted it, to take a wider range."

That is to say, the small tribes, clans, or feudal unions, sprung mostly from a common stock, and long held in contact as occupants of adjacent lands, gradually get united in other ways than by mere adhesion of race and proximity.

A further series of changes begins now to take place; to which, as before, we shall find analogies in individual organisms. Returning again to the *Hydrozoa*, we observe that in the simplest of the compound forms, the connected individuals developed from a common stock, are alike in structure, and perform like functions: with the exception, indeed, that here and there a bud, instead of developing into a stomach, mouth, and tentacles, becomes an egg-sac. But with the oceanic *Hydrozoa*, this is by no means the case. In the *Calycophoridae*, some of the polypes growing from the common germ, become developed and modified into large, long, sack-like bodies, which by their rhythmical contractions move through the water, dragging the community of polypes after them. In the *Physophoridae*, a variety of organs similarly arise by transformation of the budding polypes; so that in creatures like the *Physalia*, commonly known as the "Portuguese Man-of-war," instead of that tree-like group of similar individuals forming the original type of the class, we have a complex mass of unlike parts fulfilling unlike duties. As an individual *Hydra* may be regarded as a group of *Protozoa*, which have become partially metamorphosed into different organs;

so a *Physalia* is, morphologically considered, a group of *Hydræ* of which the individuals have been variously transformed to fit them for various functions.

This differentiation upon differentiation, is just what takes place in the evolution of a civilized society. We observed how, in the small communities first formed, there arises a certain simple political organization—there is a partial separation of classes having different duties. And now we have to observe how, in a nation formed by the fusion of such small communities, the several sections, at first alike in structures and modes of activity, gradually become unlike in both—gradually become mutually-dependent parts, diverse in their natures and functions.

The doctrine of the progressive division of labour, to which we are here introduced, is familiar to all readers. And further, the analogy between the economical division of labour and the “physiological division of labour,” is so striking, as long since to have drawn the attention of scientific naturalists: so striking, indeed, that the expression “physiological division of labour,” has been suggested by it. It is not needful, therefore, that we should treat this part of our subject in great detail. We shall content ourselves with noting a few general and significant facts, not manifest on a first inspection.

Throughout the whole animal kingdom, from the *Celenterata* upwards, the first stage of evolution is the same. Equally in the germ of a polype and in the human ovum, the aggregated mass of cells out of which the creature is to arise, gives origin to a peripheral layer of cells, slightly differing from the rest which they include; and this layer subsequently divides into two—the inner, lying in contact with the included yelk, being called the mucous layer, and the outer, exposed to surrounding agencies, being called the serous layer: or, in the terms used by Prof. Huxley, in describing the development of the *Hydrozoa*—the endoderm and ecto-

derm. This primary division marks out a fundamental contrast of parts in the future organism. From the mucous layer, or endoderm, is developed the apparatus of nutrition; while from the serous layer, or ectoderm, is developed the apparatus of external action. Out of the one arise the organs by which food is prepared and absorbed, oxygen imbibed, and blood purified; while out of the other arise the nervous, muscular, and osseous systems, by whose combined actions the movements of the body as a whole are effected. Though this is not a rigorously-correct distinction, seeing that some organs involve both of these primitive membranes, yet high authorities agree in stating it as a broad general distinction. Well, in the evolution of a society, we see a primary differentiation of analogous kind; which similarly underlies the whole future structure. As already pointed out, the only manifest contrast of parts in primitive societies, is that between the governing and the governed. In the least organized tribes, the council of chiefs may be a body of men distinguished simply by greater courage or experience. In more organized tribes, the chief-class is definitely separated from the lower class, and often regarded as different in nature—sometimes as god-descended. And later, we find these two becoming respectively freemen and slaves, or nobles and serfs. A glance at their respective functions, makes it obvious that the great divisions thus early formed, stand to each other in a relation similar to that in which the primary divisions of the embryo stand to each other. For, from its first appearance, the class of chiefs is that by which the external acts of the society are controlled: alike in war, in negotiation, and in migration. Afterwards, while the upper class grows distinct from the lower, and at the same time becomes more and more exclusively regulative and defensive in its functions, alike in the persons of kings and subordinate rulers, priests, and military leaders; the inferior class becomes more and more exclusively occupied in providing the necessaries of life for the community at large. From the soil, with which it comes

in most direct contact, the mass of the people takes up and prepares for use, the food and such rude articles of manufacture as are known ; while the overlying mass of superior men, maintained by the working population, deals with circumstances external to the community—circumstances with which, by position, it is more immediately concerned. Ceasing by-and-by to have any knowledge of, or power over, the concerns of the society as a whole, the serf-class becomes devoted to the processes of alimentation ; while the noble class, ceasing to take any part in the processes of alimentation, becomes devoted to the co-ordinated movements of the entire body politic.

Equally remarkable is a further analogy of like kind. After the mucous and serous layers of the embryo have separated, there presently arises between the two, a third, known to physiologists as the vascular layer—a layer out of which are developed the chief blood-vessels. The mucous layer absorbs nutriment from the mass of yolk it encloses ; this nutriment has to be transferred to the overlying serous layer, out of which the nervo-muscular system is being developed ; and between the two arises a vascular system by which the transfer is effected—a system of vessels which continues ever after to be the transferrer of nutriment from the places where it is absorbed and prepared, to the places where it is needed for growth and repair. Well, may we not trace a parallel step in social progress ? Between the governing and the governed, there at first exists no intermediate class ; and even in some societies that have reached considerable sizes, there are scarcely any but the nobles and their kindred on the one hand, and the serfs on the other : the social structure being such, that the transfer of commodities takes place directly from slaves to their masters. But in societies of a higher type, there grows up between these two primitive classes, another—the trading or middle class. Equally at first as now, we may see that, speaking generally, this middle class is the analogue of the middle layer in the embryo. For all

traders are essentially distributors. Whether they be wholesale dealers, who collect into large masses the commodities of various producers; or whether they be retailers, who divide out to those who want them, the masses of commodities thus collected together; all mercantile men are agents of transfer from the places where things are produced to the places where they are consumed. Thus the distributing apparatus of a society, answers to the distributing apparatus in a living body; not only in its functions, but in its intermediate origin and subsequent position, and in the time of its appearance.

Without enumerating the minor differentiations which these three great classes afterwards undergo, we will merely note that throughout, they follow the same general law with the differentiations of an individual organism. In a society, as in a rudimentary animal, we have seen that the most general and broadly contrasted divisions are the first to make their appearance; and of the subdivisions it continues true in both cases, that they arise in the order of decreasing generality.

Let us observe next, that in the one case as in the other, the specializations are at first very incomplete; and become more complete as organization progresses. We saw that in primitive tribes, as in the simplest animals, there remains much community of function between the parts that are nominally different—that, for instance, the class of chiefs long remains industrially the same as the inferior class; just as in a *Hydra*, the property of contractility is possessed by the units of the endoderm as well as by those of the ectoderm. We noted also how, as the society advanced, the two great primitive classes partook less and less of each other's functions. And we have here to remark, that all subsequent specializations are at first vague, and gradually become distinct. "In the infancy of society," says M. Guizot, "everything is confused and uncertain; there is as yet no fixed and precise line of demarcation between the different powers in a state." "Originally kings lived like other landowners, on



the incomes derived from their own private estates." Nobles were petty kings; and kings only the most powerful nobles. Bishops were feudal lords and military leaders. The right of coining money was possessed by powerful subjects, and by the Church, as well as by the king. Every leading man exercised alike the functions of landowner, farmer, soldier, statesman, judge. Retainers were now soldiers, and now labourers, as the day required. But by degrees the Church has lost all civil jurisdiction; the State has exercised less and less control over religious teaching; the military class has grown a distinct one; handicrafts have concentrated in towns; and the spinning-wheels of scattered farmhouses, have disappeared before the machinery of manufacturing districts. Not only is all progress from the homogeneous to the heterogeneous; but at the same time it is from the indefinite to the definite.

Another fact which should not be passed over, is, that in the evolution of a large society out of an aggregation of small ones, there is a gradual obliteration of the original lines of separation—a change to which, also, we may see analogies in living bodies. Throughout the sub-kingdom *Annulosa*, this is clearly and variously illustrated. Among the lower types of this sub-kingdom, the body consists of numerous segments that are alike in nearly every particular. Each has its external ring; its pair of legs, if the creature has legs; its equal portion of intestine, or else its separate stomach; its equal portion of the great blood-vessel, or, in some cases, its separate heart; its equal portion of the nervous cord, and, perhaps, its separate pair of ganglia. But in the highest types, as in the large *Crustacea*, many of the segments are completely fused together; and the internal organs are no longer uniformly repeated in all the segments. Now the segments of which nations at first consist, lose their separate external and internal structures in a similar manner. In feudal times, the minor communities governed by feudal lords, were severally organized in the same rude way; and were

held together only by the fealty of their respective rulers to some suzerain. But along with the growth of a central power, the demarcations of these local communities disappeared; and their separate organizations merged into the general organization. The like is seen on a larger scale in the fusion of England, Wales, Scotland, and Ireland; and, on the Continent, in the coalescence of provinces into kingdoms. Even in the disappearance of law-made divisions, the process is analogous. Among the Anglo-Saxons, England was divided into tithings, hundreds, and counties: there were county-courts, courts of hundred, and courts of tithing. The courts of tithing disappeared first; then the courts of hundred, which have, however, left traces; while the county-jurisdiction still exists. But chiefly it is to be noted, that there eventually grows up an organization which has no reference to these original divisions, but traverses them in various directions, as is the case in creatures belonging to the sub-kingdom just named; and, further, that in both cases it is the sustaining organization which thus traverses old boundaries, while in both cases it is the governmental, or co-ordinating organization in which the original boundaries continue traceable. Thus, in the highest *Annulosa*, the exo-skeleton and the muscular system, never lose all traces of their primitive segmentation; but throughout a great part of the body, the contained viscera do not in the least conform to the external divisions. Similarly, with a nation, we see that while, for governmental purposes, such divisions as counties and parishes still exist, the structure developed for carrying on the nutrition of society, wholly ignores these boundaries: our great cotton-manufacture spreads out of Lancashire into north Derbyshire; Leicestershire and Nottinghamshire have long divided the stocking-trade between them; one great centre for the production of iron and iron-goods, includes parts of Warwickshire, Staffordshire, and Worcestershire; and those various specializations of agriculture which have made different parts of England noted for different-products,

show no more respect to county-boundaries than do our growing towns to the boundaries of parishes.

If, after contemplating these analogies of structure, we inquire whether there are any such analogies between the processes of organic change, the answer is—yes. The causes which lead to increase of bulk in any part of the body politic, are of like nature with those which lead to increase of bulk in any part of an individual body. In both cases the antecedent is greater functional activity, consequent on greater demand. Each limb, viscus, gland, or other member of an animal, is developed by exercise—by actively discharging the duties which the body at large requires of it; and similarly, any class of labourers or artisans, any manufacturing centre, or any official agency, begins to enlarge when the community devolves on it an increase of work. In each case, too, growth has its conditions and its limits. That any organ in a living being may grow by exercise, there needs a due supply of blood: all action implies waste; blood brings the materials for repair; and before there can be growth, the quantity of blood supplied must be more than that requisite for repair. So is it in a society. If to some district which elaborates for the community particular commodities—say the woollens of Yorkshire—there comes an augmented demand; and if, in fulfilment of this demand, a certain expenditure and wear of the manufacturing organization are incurred; and if, in payment for the extra supply of woollens sent away, there comes back only such quantity of commodities as replaces the expenditure, and makes good the waste of life and machinery; there can clearly be no growth. That there may be growth, the commodities obtained in return must be more than sufficient for these ends; and just in proportion as the surplus is great will the growth be rapid. Whence it is manifest that what in commercial affairs we call *profit*, answers to the excess of nutrition over waste in a living body. Moreover, in both cases, when the functional activity is high and the nutrition defective, there results not growth but decay. If in an

animal, any organ is worked so hard that the channels which bring blood cannot furnish enough for repair, the organ dwindles; and if in the body politic, some part has been stimulated into great productivity, and cannot afterwards get paid for all its produce, certain of its members become bankrupt, and it decreases in size.

One more parallelism to be here noted, is, that the different parts of the social organism, like the different parts of an individual organism, compete for nutriment; and severally obtain more or less of it according as they are discharging more or less duty. If a man's brain be over-excited, it will abstract blood from his viscera and stop digestion; or digestion actively going on, will so affect the circulation through the brain as to cause drowsiness; or great muscular exertion will determine such a quantity of blood to the limbs, as to arrest digestion or cerebral action, as the case may be. So, likewise, in a society, it frequently happens that great activity in some one direction, causes partial arrests of activity elsewhere, by abstracting capital, that is commodities: as instance the way in which the sudden development of our railway-system hampered commercial operations; or the way in which the raising of a large military force temporarily stops the growth of leading industries.

The last few paragraphs introduce the next division of our subject. Almost unawares we have come upon the analogy which exists between the blood of a living body, and the circulating mass of commodities in the body politic. We have now to trace out this analogy from its simplest to its most complex manifestations.

In the lowest animals there exists no blood properly so called. Through the small aggregation of cells which make up a *Hydra*, permeate the juices absorbed from the food. There is no apparatus for elaborating a concentrated and purified nutriment, and distributing it among the component units; but these component units directly imbibe the unpre-

pared nutriment, either from the digestive cavity or from each other. May we not say that this is what takes place in an aboriginal tribe? All its members severally obtain for themselves the necessaries of life in their crude states; and severally prepare them for their own uses as well as they can. When there arises a decided differentiation between the governing and the governed, some amount of transfer begins between those inferior individuals, who, as workers, come directly in contact with the products of the earth, and those superior ones who exercise the higher functions—a transfer parallel to that which accompanies the differentiation of the ectoderm from the endoderm. In the one case, as in the other, however, it is a transfer of products that are little if at all prepared; and takes place directly from the unit which obtains to the unit which consumes, without entering into any general current.

Passing to larger organisms—individual and social—we find the first advance upon this arrangement. Where, as among the compound *Hydrozoa*, there is an aggregation of many such primitive groups as form *Hydra*; or where, as in a *Medusa*, one of these groups has become of great size; there exist rude channels running throughout the substance of the body: not, however, channels for the conveyance of prepared nutriment, but mere prolongations of the digestive cavity, through which the crude chyle-aqueous fluid reaches the remoter parts, and is moved backwards and forwards by the creature's contractions. Do we not find in some of the more advanced primitive communities, an analogous condition? When the men, partially or fully united into one society, become numerous—when, as usually happens, they cover a surface of country not everywhere alike in its products—when, more especially, there arise considerable classes that are not industrial; some process of exchange and distribution inevitably arises. Traversing here and there the earth's surface, covered by that vegetation on which human life depends, and in which, as we say, the units of a society

are imbedded, there are formed indefinite paths, along which some of the necessities of life occasionally pass, to be bartered for others which presently come back along the same channels. Note, however, that at first little else but crude commodities are thus transferred—fruits, fish, pigs or cattle, skins, etc.: there are few, if any, manufactured products or articles prepared for consumption. And note further, that such distribution of these unprepared necessities of life as takes place, is but occasional—goes on with a certain slow, irregular rhythm.

Further progress in the elaboration and distribution of nutriment, or of commodities, is a necessary accompaniment of further differentiation of functions in the individual body or in the body politic. As fast as each organ of a living animal becomes confined to a special action, it must become dependent on the rest for all those materials which its position and duty do not permit it to obtain for itself; in the same way that, as fast as each particular class of a community becomes exclusively occupied in producing its own commodity, it must become dependent on the rest for the other commodities it needs. And, simultaneously, a more perfectly-elaborated blood will result from a highly-specialized group of nutritive organs, severally adapted to prepare its different elements; in the same way that the stream of commodities circulating throughout a society, will be of superior quality in proportion to the greater division of labour among the workers. Observe, also, that in either case the circulating mass of nutritive materials, besides coming gradually to consist of better ingredients, also grows more complex. An increase in the number of the unlike organs which add to the blood their waste matters, and demand from it the different materials they severally need, implies a blood more heterogeneous in composition—an *à priori* conclusion which, according to Dr. Williams, is inductively confirmed by examination of the blood throughout the various grades of the animal kingdom. And similarly, it is manifest that as fast

as the division of labour among the classes of a community, becomes greater, there must be an increasing heterogeneity in the currents of merchandize flowing throughout that community.

The circulating mass of nutritive materials in individual organisms and in social organisms, becoming alike better in the quality of its ingredients and more heterogeneous in composition, as the type of structure becomes higher; eventually has added to it in both cases another element, which is not itself nutritive, but facilitates the processes of nutrition. We refer, in the case of the individual organism, to the blood-discs; and in the case of the social organism, to money. This analogy has been observed by Liebig, who in his "Familiar Letters on Chemistry," says:—

"Silver and gold have to perform in the organization of the State, the same function as the blood corpuscles in the human organization. As these round discs, without themselves taking an immediate share in the nutritive process, are the medium, the essential condition of the change of matter, of the production of the heat, and of the force by which the temperature of the body is kept up and the motions of the blood and all the juices are determined, so has gold become the medium of all activity in the life of the State."

And blood-corpuscles being like money in their functions, and in the fact that they are not consumed in nutrition, he further points out, that the number of them which in a considerable interval flows through the great centres, is enormous when compared with their absolute number; just as the quantity of money which annually passes through the great mercantile centres, is enormous when compared with the total quantity of money in the kingdom. Nor is this all. Liebig has omitted the significant circumstance, that only at a certain stage of organization does this element of the circulation make its appearance. Throughout extensive divisions of the lower animals, the blood contains no corpuscles; and in societies of low civilization, there is no money.

Thus far, we have considered the analogy between the blood

in a living body and the consumable and circulating commodities in the body politic. Let us now compare the appliances by which they are respectively distributed. We shall find in the development of these appliances, parallelisms not less remarkable than those above set forth. Already we have shown that, as classes, wholesale and retail distributors discharge in a society, the office which the vascular system discharges in an individual creature ; that they come into existence later than the other two great classes, as the vascular layer appears later than the mucous and serous layers ; and that they occupy a like intermediate position. Here, however, it remains to be pointed out that a complete conception of the circulating system in a society, includes not only the active human agents who propel the currents of commodities, and regulate their distribution ; but includes, also, the channels of communication. It is the formation and arrangement of these, to which we now direct attention.

Going back once more to those lower animals in which there is found nothing but a partial diffusion, not of blood, but only of crude nutritive fluids, it is to be remarked that the channels through which the diffusion takes place, are mere excavations through the half-organized substance of the body : they have no lining membranes, but are mere *lacunæ* traversing a rude tissue. Now countries in which civilization is but commencing, display a like condition : there are no roads properly so called ; but the wilderness of vegetal life covering the earth's surface, is pierced by tracks, through which the distribution of crude commodities takes place. And while in both cases, the acts of distribution occur only at long intervals (the currents, after a pause, now setting towards a general centre, and now away from it), the transfer is in both cases slow and difficult. But among other accompaniments of progress, common to animals and societies, comes the formation of more definite and complete channels of communication. Blood-vessels acquire distinct walls ; roads are fenced and gravelled. This advance is first seen in



those roads or vessels that are nearest to the chief centres of distribution; while the peripheral roads and peripheral vessels, long continue in their primitive states. At a yet later stage of development, where comparative finish of structure is found throughout the system as well as near the chief centres, there remains in both cases the difference, that the main channels are comparatively broad and straight, while the subordinate ones are narrow and tortuous in proportion to their remoteness. Lastly, it is to be remarked that there ultimately arise in the higher social organisms, as in the higher individual organisms, main channels of distribution still more distinguished by their perfect structures, their comparative straightness, and the absence of those small branches which the minor channels perpetually give off. And in railways we also see, for the first time in the social organism, a specialization with respect to the directions of the currents—a system of double channels conveying currents in opposite directions, as do the arteries and veins of a well-developed animal.

These parallelisms in the evolutions and structures of the circulating systems, introduce us to others in the kinds and rates of the movements going on through them. In the lowest societies, as in the lowest creatures, the distribution of crude nutriment is by slow gurgitations and regurgitations. In creatures that have rude vascular systems, as in societies that are beginning to have roads and some transfer of commodities along them, there is no regular circulation in definite courses; but instead, periodical changes of the currents—now towards this point, and now towards that. Through each part of an inferior mollusk's body, the blood flows for a while in one direction, then stops, and flows in the opposite direction; just as through a rudely-organized society, the distribution of merchandize is slowly carried on by great fairs, occurring in different localities, to and from which the currents periodically set. Only animals of tolerably complete organizations, like advanced communities, are per-

meated by constant currents that are definitely directed. In living bodies, the local and variable currents disappear when there grow up great centres of circulation, generating more powerful currents, by a rhythm which ends in a quick, regular pulsation. And when in social bodies, there arise great centres of commercial activity, producing and exchanging large quantities of commodities, the rapid and continuous streams drawn in and emitted by these centres, subdue all minor and local circulations: the slow rhythm of fairs merges into the faster one of weekly markets, and in the chief centres of distribution, weekly markets merge into daily markets; while in place of the languid transfer from place to place, taking place at first weekly, then twice or thrice a week, we by-and-by get daily transfer, and finally transfer many times a day—the original sluggish, irregular rhythm, becomes a rapid, equable pulse. Mark, too, that in both cases the increased activity, like the greater perfection of structure, is much less conspicuous at the periphery of the vascular system. On main lines of railway, we have, perhaps, a score trains in each direction daily, going at from thirty to fifty miles an hour; as, through the great arteries, the blood rushes rapidly in successive gushes. Along high roads, there move vehicles conveying men and commodities with much less, though still considerable, speed, and with a much less decided rhythm; as, in the smaller arteries, the speed of the blood is greatly diminished, and the pulse less conspicuous. In parish-roads, narrower, less complete, and more tortuous, the rate of movement is further decreased and the rhythm scarcely traceable; as in the ultimate arteries. In those still more imperfect byeroads which lead from these parish-roads to scattered farmhouses and cottages, the motion is yet slower and very irregular; just as we find it in the capillaries. While along the field-roads, which, in their unformed, unfenced state, are typical of *lacune*, the movement is the slowest, the most irregular, and the most infrequent; as it is, not only in the primitive *lacune* of animals,

and societies, but as it is also in those *lacune* in which the vascular system ends among extensive families of inferior creatures.

Thus, then, we find between the distributing systems of living bodies and the distributing systems of bodies politic, wonderfully close parallelisms. In the lowest forms of individual and social organisms, there exist neither prepared nutritive matters nor distributing appliances; and in both, these, arising as necessary accompaniments of the differentiation of parts, approach perfection as this differentiation approaches completeness. In animals, as in societies, the distributing agencies begin to show themselves at the same relative periods, and in the same relative positions. In the one, as in the other, the nutritive materials circulated, are at first crude and simple, gradually become better elaborated and more heterogeneous, and have eventually added to them a new element facilitating the nutritive processes. The channels of communication pass through similar phases of development, which bring them to analogous forms. And the directions, rhythms, and rates of circulation, progress by like steps to like final conditions.

We come at length to the nervous system. Having noticed the primary differentiation of societies into the governing and governed classes, and observed its analogy to the differentiation of the two primary tissues which respectively develop into organs of external action and organs of alimentation; having noticed some of the leading analogies between the development of industrial arrangements and that of the alimentary apparatus; and having, above, more fully traced the analogies between the distributing systems, social and individual; we have now to compare the appliances by which a society, as a whole, is regulated, with those by which the movements of an individual creature are regulated. We shall find here, parallelisms equally striking with those already detailed.

The class out of which governmental organization originates, is, as we have said, analogous in its relations to the ectoderm of the lowest animals and of embryonic forms. And as this primitive membrane, out of which the nervo-muscular system is evolved, must, even in the first stage of its differentiation, be slightly distinguished from the rest by that greater impressibility and contractility characterizing the organs to which it gives rise; so, in that superior class which is eventually transformed into the directo-executive system of a society (its legislative and defensive appliances), does there exist in the beginning, a larger endowment of the capacities required for these higher social functions. Always, in rude assemblages of men, the strongest, most courageous, and most sagacious, become rulers and leaders; and, in a tribe of some standing, this results in the establishment of a dominant class, characterized on the average by those mental and bodily qualities which fit them for deliberation and vigorous combined action. Thus that greater impressibility and contractility, which in the rudest animal types characterize the units of the ectoderm, characterize also, the units of the primitive social ectoderm; since impressibility and contractility are the respective roots of intelligence and strength.

Again, in the unmodified ectoderm, as we see it in the *Hydra*, the units are all endowed both with impressibility and contractility; but as we ascend to higher types of organization, the ectoderm differentiates into classes of units which divide those two functions between them: some, becoming exclusively impressible, cease to be contractile; while some, becoming exclusively contractile, cease to be impressible. Similarly with societies. In an aboriginal tribe, the directive and executive functions are diffused in a mingled form throughout the whole governing class. Each minor chief commands those under him, and, if need be, himself coerces them into obedience. The council of chiefs itself carries out on the battle-field its own decisions. The head chief not only

makes laws, but administers justice with his own hands. In larger and more settled communities, however, the directive and executive agencies begin to grow distinct from each other. As fast as his duties accumulate, the head chief or king confines himself more and more to directing public affairs, and leaves the execution of his will to others: he deposes others to enforce submission, to inflict punishments, or to carry out minor acts of offence and defence; and only on occasions when, perhaps, the safety of the society and his own supremacy are at stake, does he begin to act as well as direct. As this differentiation establishes itself, the characteristics of the ruler begin to change. No longer, as in an aboriginal tribe, the strongest and most daring man, the tendency is for him to become the man of greatest cunning, foresight, and skill in the management of others; for in societies that have advanced beyond the first stage, it is chiefly such qualities that insure success in gaining supreme power, and holding it against internal and external enemies. Thus that member of the governing class who comes to be the chief directing agent, and so plays the same part that a rudimentary nervous centre does in an unfolding organism, is usually one endowed with some superiorities of nervous organization.

In those somewhat larger and more complex communities possessing, perhaps, a separate military class, a priesthood, and dispersed masses of population requiring local control, there necessarily grow up subordinate governing agents; who, as their duties accumulate, severally become more directive and less executive in their characters. And when, as commonly happens, the king begins to collect round himself advisers who aid him by communicating information, preparing subjects for his judgment, and issuing his orders; we may say that the form of organization is comparable to one very general among inferior types of animals, in which there exists a chief ganglion with a few dispersed minor ganglia under its control.

The analogies between the evolution of governmental structures in societies, and the evolution of governmental structures in living bodies, are, however, more strikingly displayed during the formation of nations by the coalescence of small communities—a process already shown to be, in several respects, parallel to the development of those creatures that primarily consist of many like segments. Among other points of community between the successive rings which make up the body in the lower *Articulata*, is the possession of similar pairs of ganglia. These pairs of ganglia, though united together by nerves, are very incompletely dependent on any general controlling power. Hence it results that when the body is cut in two, the hinder part continues to move forward under the propulsion of its numerous legs; and that when the chain of ganglia has been divided without severing the body, the hind limbs may be seen trying to propel the body in one direction, while the fore limbs are trying to propel it in another. Among the higher *Articulata*, however, a number of the anterior pairs of ganglia, besides growing larger, unite in one mass; and this great cephalic ganglion, becoming the co-ordinator of all the creature's movements, there no longer exists much local independence. Now may we not in the growth of a consolidated kingdom out of petty sovereignties or baronies, observe analogous changes? Like the chiefs and primitive rulers above described, feudal lords, exercising supreme power over their respective groups of retainers, discharge functions analogous to those of rudimentary nervous centres; and we know that at first they, like their analogues, are distinguished by superiorities of directive and executive organization. Among these local governing centres, there is, in early feudal times, very little subordination. They are in frequent antagonism; they are individually restrained chiefly by the influence of large parties in their own class; and are but imperfectly and irregularly subject to that most powerful member of their order who has gained the position of head-suzerain or king. As the growth and organization of the

society progresses, these local directive centres fall more and more under the control of a chief directive centre. Closer commercial union between the several segments, is accompanied by closer governmental union; and these minor rulers end in being little more than agents who administer, in their several localities, the laws made by the supreme ruler: just as the local ganglia above described, eventually become agents which enforce, in their respective segments, the orders of the cephalic ganglion. The parallelism holds still further. We remarked above, when speaking of the rise of aboriginal kings, that in proportion as their territories and duties increase, they are obliged not only to perform their executive functions by deputy, but also to gather round themselves advisers to aid them in their directive functions; and that thus, in place of a solitary governing unit, there grows up a group of governing units, comparable to a ganglion consisting of many cells. Let us here add, that the advisers and chief officers who thus form the rudiment of a ministry, tend from the beginning to exercise a certain control over the ruler. By the information they give and the opinions they express, they sway his judgment and affect his commands. To this extent he therefore becomes a channel through which are communicated the directions originating with them; and in course of time, when the advice of ministers becomes the acknowledged source of his actions, the king assumes very much the character of an automatic centre, reflecting the impressions made on him from without.

Beyond this complication of governmental structure, many societies do not progress; but in some, a further development takes place. Our own case best illustrates this further development, and its further analogies. To kings and their ministries have been added, in England, other great directive centres, exercising a control which, at first small, has been gradually becoming predominant: as with the great governing ganglia that especially distinguish the highest classes of living beings. Strange as the assertion will be thought, our

Houses of Parliament discharge in the social economy, functions that are in sundry respects comparable to those discharged by the cerebral masses in a vertebrate animal. As it is in the nature of a single ganglion to be affected only by special stimuli from particular parts of the body; so it is in the nature of a single ruler to be swayed in his acts by exclusive personal or class interests. As it is in the nature of an aggregation of ganglia, connected with the primary one, to convey to it a greater variety of influences from more numerous organs, and thus to make its acts conform to more numerous requirements; so it is in the nature of a king surrounded by subsidiary controlling powers, to adapt his rule to a greater number of public exigencies. And as it is in the nature of those great and latest-developed ganglia which distinguish the higher animals, to interpret and combine the multiplied and varied impressions conveyed to them from all parts of the system, and to regulate the actions in such way as duly to regard them all; so it is in the nature of those great and latest-developed legislative bodies which distinguish the most advanced societies, to interpret and combine the wishes and complaints of all classes and localities, and to regulate public affairs as much as possible in harmony with the general wants. The cerebrum co-ordinates the countless heterogeneous considerations which affect the present and future welfare of the individual as a whole; and the legislature co-ordinates the countless heterogeneous considerations which affect the immediate and remote welfare of the whole community. We may describe the office of the brain as that of *averaging* the interests of life, physical, intellectual, moral, social; and a good brain is one in which the desires answering to these respective interests are so balanced, that the conduct they jointly dictate, sacrifices none of them. Similarly, we may describe the office of a Parliament as that of *averaging* the interests of the various classes in a community; and a good Parliament is one in which the parties answering to these respective interests are so balanced, that their united



legislation concedes to each class as much as consists with the claims of the rest. Besides being comparable in their duties, these great directive centres, social and individual, are comparable in the processes by which their duties are discharged. It is now an acknowledged truth in psychology, that the cerebrum is not occupied with direct impressions from without, but with the ideas of such impressions: instead of the actual sensations produced in the body, and directly appreciated by the sensory ganglia or primitive nervous centres, the cerebrum receives only the representations of these sensations; and its consciousness is called *representative* consciousness, to distinguish it from the original or *presentative* consciousness. Is it not significant that we have hit on the same word to distinguish the function of our House of Commons? We call it a *representative* body, because the interests with which it deals—the pains and pleasures about which it consults—are not directly presented to it, but represented to it by its various members; and a debate is a conflict of representations of the evils or benefits likely to follow from a proposed course—a description which applies with equal truth to a debate in the individual consciousness. In both cases, too, these great governing masses take no part in the executive functions. As, after a conflict in the cerebrum, those desires which finally predominate, act on the subjacent ganglia, and through their instrumentality determine the bodily actions; so the parties which, after a parliamentary struggle, gain the victory, do not themselves carry out their wishes, but get them carried out by the executive divisions of the Government. The fulfilment of all legislative decisions still devolves on the original directive centres—the impulse passing from the Parliament to the Ministers, and from the Ministers to the King, in whose name everything is done; just as those smaller, first-developed ganglia, which in the lowest vertebrata are the chief controlling agents, are still, in the brains of the higher vertebrata, the agents through which the dictates of the cerebrum are worked out. Moreover, in

both cases these original centres become increasingly automatic. In the developed vertebrate animal, they have little function beyond that of conveying impressions to, and executing the determinations of, the larger centres. In our highly organized government, the monarch has long been lapsing into a passive agent of Parliament; and now, ministries are rapidly falling into the same position. Nay, between the two cases there is a parallelism, even in respect of the exceptions to this automatic action. For in the individual creature, it happens that under circumstances of sudden alarm, as from a loud sound close at hand, an unexpected object starting up in front, or a slip from insecure footing, the danger is guarded against by some quick involuntary jump, or adjustment of the limbs, that takes place before there is time to consider the impending evil, and take deliberate measures to avoid it: the rationale of which is, that these violent impressions produced on the senses, are reflected from the sensory ganglia to the spinal cord and muscles, without, as in ordinary cases, first passing through the cerebrum. In like manner on national emergencies calling for prompt action, the King and Ministry, not having time to lay the matter before the great deliberative bodies, themselves issue commands for the requisite movements or precautions: the primitive, and now almost automatic, directive centres, resume for a moment their original uncontrolled power. And then, strangest of all, observe that in either case there is an after-process of approval or disapproval. The individual on recovering from his automatic start, at once contemplates the cause of his fright; and, according to the case, concludes that it was well he moved as he did, or condemns himself for his groundless alarm. In like manner, the deliberative powers of the State, discuss, as soon as may be, the unauthorized acts of the executive powers; and, deciding that the reasons were or were not sufficient, grant or withhold a bill of indemnity.\*

\* It may be well to warn the reader against an error fallen into by one who criticised this essay on its first publication—the error of supposing that the

Thus far in comparing the governmental organization of the body politic with that of an individual body, we have considered only the respective co-ordinating centres. We have yet to consider the channels through which these co-ordinating centres receive information and convey commands. In the simplest societies, as in the simplest organisms, there is no "internuncial apparatus," as Hunter styled the nervous system. Consequently, impressions can be but slowly propagated from unit to unit throughout the whole mass. The same progress, however, which, in animal-organization, shows itself in the establishment of ganglia or directive centres, shows itself also in the establishment of nerve-threads, through which the ganglia receive and convey impressions, and so control remote organs. And in societies the like eventually takes place. After a long period during which the directive centres communicate with various parts of the society through other means, there at last comes into existence an "internuncial apparatus," analogous to that found in individual bodies. The comparison of telegraph-wires to nerves, is familiar to all. It applies, however, to an extent not commonly supposed. We do not refer to the near alliance between the subtle forces employed in the two cases; though it is now held that the nerve-force, if not literally electric, is still a special form of electric action, related to the ordinary form much as magnetism is. But we refer to the structural arrangements of our telegraph-system. Thus, throughout the vertebrate sub-kingdom, the great nerve-bundles diverge from the vertebrate axis, side by side with the great arteries; and similarly, our groups of telegraph-wires are carried along the sides of our railways. The most striking parallelism, however, remains. Into each great bundle of nerves, as it

analogy here intended to be drawn, is a specific analogy between the organization of society in England, and the human organization. As said at the outset, no such specific analogy exists. The above parallel, is one between the most-developed systems of governmental organization, individual and social; and the vertebrate type is instanced, merely as exhibiting this most-developed system. If any specific comparison were made, which it cannot rationally be, it would be to some much lower vertebrate form than the human.

leaves the axis of the body along with an artery, there enters a branch of the sympathetic nerve; which branch, accompanying the artery throughout its ramifications, has the function of regulating its diameter and otherwise controlling the flow of blood through it according to the local requirements. Analogously, in the group of telegraph-wires running alongside each railway, there is one for the purpose of regulating the traffic—for retarding or expediting the flow of passengers and commodities, as the local conditions demand. Probably, when our now rudimentary telegraph-system is fully developed, other analogies will be traceable.

Such, then, is a general outline of the evidence which justifies, in detail, the comparison of societies to living organisms. That they gradually increase in mass; that they become little by little more complex; that at the same time their parts grow more mutually dependent; and that they continue to live and grow as wholes, while successive generations of their units appear and disappear; are broad peculiarities which bodies politic display in common with all living bodies; and in which they and living bodies differ from everything else. And on carrying out the comparison in detail, we find that these major analogies involve many minor analogies, far closer than might have been expected. To these we would gladly have added others. We had hoped to say something respecting the different types of social organization, and something also on social metamorphoses; but we have reached our assigned limits.

## REPRESENTATIVE GOVERNMENT—WHAT IS IT GOOD FOR?

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SHAKSPEARE'S simile for adversity—

Which, like the toad, ugly and venomous,  
Wears yet a precious jewel in his head,

might fitly be used also as a simile for a disagreeable truth. Repulsive as is its aspect, the hard fact which dissipates a cherished illusion, is presently found to contain the germ of a more salutary belief. The experience of every one furnishes instances in which an opinion long shrunk from as seemingly at variance with all that is good, but finally accepted as irresistible, turns out to be fraught with benefits. It is thus with self-knowledge: much as we dislike to admit our defects, we find it better to know and guard against, than to ignore them. It is thus with changes of creed: alarming as looks the reasoning by which superstitions are overthrown, the convictions to which it leads prove to be healthier ones than those they superseded. And it is thus with political enlightenment: men eventually see cause to thank those who pull to pieces their political air-castles; hateful as their antagonism once seemed. Moreover, not only is it always better to believe truth than error; but the repugnant-looking facts are ever found to be parts of something far more perfect and beautiful than the ideal which they dispelled: the actuality always transcends the dream. To the many illustrations of this which might be cited, we shall presently add another.

It is a conviction almost universally entertained here in England, that our method of making and administering laws

possesses every virtue. Prince Albert's unlucky saying that "Representative Government is on its trial," is vehemently repudiated: we consider that the trial has long since ended in our favour on all the counts. Partly from ignorance, partly from the bias of education, partly from that patriotism which leads the men of each nation to pride themselves in their own institutions, we have an unhesitating belief in the entire superiority of our form of political organization. Yet there is evidence that it has not a few apparently serious defects. Unfriendly critics can point out vices that are manifestly inherent. And if we may believe the defenders of despotism, these vices are fatal to its efficiency.

Now instead of denying or blinking these allegations, it would be much wiser candidly to examine them—to inquire whether they are true; and if true, what they imply. If, as most of us are so confident, government by representatives is better than any other, we can afford patiently to listen to all adverse remarks: believing that they are either invalid, or that if valid they do not essentially tell against its merits. And we may be sure that if our political system is well founded, this crucial criticism will serve but to bring out its worth more clearly than ever; and to give us better conceptions of its nature, its meaning, its purpose. Let us, then, banishing for the nonce all prepossessions, and taking up a thoroughly antagonistic point of view, set down without mitigation its many vices, flaws, and absurdities.

Is it not manifest on the face of it, that a ruling body made up of many individuals, who differ in character, education, and aims, who belong to classes having more or less antagonistic ideas and feelings, and who are severally swayed by the special opinions of the districts deputing them—is it not manifest that such a body must be a cumbrous apparatus for the management of public affairs? When we devise a machine to perform any operation, we take care that its parts are as few as possible; that they are adapted to their respec-

tive ends ; that they are properly joined with one another ; and that they work smoothly to their common purpose. Our political machine, however, is constructed upon directly opposite principles. Its parts are extremely numerous : multiplied, indeed, beyond all reason. They are not severally chosen as specially qualified for particular functions ; but are mostly chosen without reference to particular functions. No care is taken that they shall fit well together : on the contrary, our arrangements are such that they are certain not to fit. And that, as a consequence, they do not and cannot act in harmony, is a fact nightly demonstrated to all the world. In truth, had the problem been to find an appliance for the slow and bungling transaction of business, it could scarcely have been better solved. Immense hindrance results from the mere multiplicity of parts ; a further immense hindrance results from their incongruity ; yet another immense hindrance results from the frequency with which they are changed ; while the greatest hindrance of all results from the want of subordination of the parts to their functions—from the fact that the personal welfare of the legislator is not bound up with the efficient performance of his political duty, but is often totally at variance with the performance of his political duty.

These are defects of a kind that do not admit of remedy. They are inherent in the very nature of our institutions ; and they cannot fail to produce disastrous mismanagement. If proofs of this be needed, they may be furnished in abundance, both from the current history of our central representative government, and from that of local ones, public and private—from that of municipal corporations, boards of health, boards of guardians, mechanics' and literary institutions, and societies of all kinds : the universality of the evils showing that they are not accidental but intrinsic. Let us, before going on to contemplate these evils as displayed on a great scale in our legislature, glance at some of them in their simpler and smaller manifestations.

We will not dwell upon the comparative inefficiency of deputed administration in all mercantile affairs. The untrustworthiness of management by proxies, might be afresh illustrated by the many recent joint-stock-bank catastrophies: the recklessness and dishonesty of rulers whose interests are not one with those of the concern they control, being in these cases conspicuously displayed. Or we could enlarge on the same truth as exhibited in the doings of railway boards: instancing the frequent malversations proved against directors; the carelessness which has permitted Robson and Redpath frauds; the rashness perseveringly shown in making unprofitable branches and extensions. But facts of this kind are sufficiently familiar. All men are convinced that for manufacturing and commercial ends, management by many partially-interested directors, is immensely inferior to management by a single wholly-interested owner.

Let us pass, then, to less notorious examples. Mechanics' institutions will supply our first. The theory of these is plausible enough. Artizans wanting knowledge, and benevolent middle-class people wishing to help them to it, constitute the raw material. By uniting their means they propose to obtain literary and other advantages, which else would be beyond their reach. And it is concluded that, being all interested in securing the proposed objects, and the governing body being chosen out of their number, the results cannot fail to be such as were intended. In most cases, however, the results are quite otherwise. Indifference, stupidity, party-spirit, and religious dissension, nearly always thwart the efforts of the promoters. It is thought good policy to select as president some local notability; probably not distinguished for wisdom, but whose donation or prestige more than counterbalances his defect in this respect. Vice-presidents are chosen with the same view: a clergyman or two; some neighbouring squires, if they can be had; an ex-mayor; several aldermen; half a dozen manufacturers and wealthy tradesmen; and a miscellaneous complement. While the committee, mostly



elected more because of their position or popularity than their intelligence or fitness for co-operation, exhibit similar incongruities. Causes of dissension quickly arise. A book much wished for by the mass of the members, is tabooed, because ordering it would offend the clerical party in the institution. Regard for the prejudices of certain magistrates and squires who figure among the vice-presidents, forbids the engagement of an otherwise desirable and popular lecturer, whose political and religious opinions are somewhat extreme. The selection of newspapers and magazines for the reading-room, is a fruitful source of disputes. Should some, thinking it would be a great boon to those for whom the institution was expressly established, propose to open the reading-room on Sundays, there arises a violent fight; ending, perhaps, in the secession of some of the defeated party. The question of amusements, again, furnishes a bone of contention. Shall the institution exist solely for instruction, or shall it add gratification? The refreshment-question, also, is apt to be raised, and to add to the other causes of difference. In short, the stupidity, prejudice, party-spirit, and squabbling, are such as eventually to drive away in disgust those who should have been the administrators; and to leave the control in the hands of a clique, who pursue some humdrum middle course, satisfying nobody. Instead of that prosperity which would probably have been achieved under the direction of one good man-of-business, whose welfare was bound up with its success, the institution loses its prestige, and dwindles away: ceases almost entirely to be what was intended—a *mechanics'* institution; and becomes little more than a middle-class lounge, kept up not so much by the permanent adhesion of its members, as by the continual addition of new ones in place of the old ones constantly falling off. Meanwhile, the end originally proposed is fulfilled, so far as it gets fulfilled at all, by private enterprise. Cheap newspapers and cheap periodicals, provided by publishers having in view the pockets and tastes of the working-classes; coffee-shops and penny reading-rooms,

set up by men whose aim is profit; are the instruments of the chief proportion of such culture as is going on.

In higher-class institutions of the same order—in Athenæums, Philosophical Societies, etc.—the like inefficiency of representative government is very generally displayed. Quickly following the vigour of early enthusiasm, come class and sectarian differences, the final supremacy of a party, bad management, apathy. Subscribers complain they cannot get what they want; and one by one desert to private book-clubs or to Mudie.

Turning from non-political to political institutions, we might, had we space, draw many illustrations from the doings of the old poor-law authorities, or those of modern boards of guardians; but omitting these and others such, we will, among local governments, confine ourselves to the reformed municipal corporations.

If, leaving out of sight all other evidences, and forgetting that they are newly-organized bodies into which corruption has scarcely had time to creep, we were to judge of these municipal corporations by the town-improvements they have effected, we might pronounce them successful. But, even without insisting on the fact that such improvements are more due to the removal of obstructions, and to that same progressive spirit which has established railways and telegraphs, than to the positive virtues of these civic governments; it is to be remarked, that the execution of numerous public works is by no means an adequate test. With power of raising funds limited only by a rebellion of ratepayers, it is easy in prosperous, increasing towns, to make a display of efficiency. The proper questions to be asked are:—Do municipal elections end in the choice of the fittest men that are to be found? Does the resulting administrative body, perform well and economically the work that devolves on it? And does it show sound judgment in refraining from needless or improper work? To these questions the answers are by no means satisfactory.

Town-councils are not conspicuous for either intelligence or high character. On the contrary, they consist of a very large proportion of ciphers, interspersed with a few superior men. Indeed, there are competent judges who think that, on the average, their members are inferior to those of the old close corporations they superseded. As all the world knows, the choice turns mainly on political opinions. The first question respecting any candidate is, not whether he has great knowledge, judgment, or business-faculty—not whether he has any special aptitude for the duty to be discharged; but whether he is Whig or Tory. Even supposing his politics to be approved, his nomination still does not depend chiefly on his proved uprightness or capacity; but much more on his friendly relations with the dominant clique. A number of the corporation magnates, habitually meeting probably at the chief hotel, and there held together as much by the brotherhood of conviviality as by that of opinion, discuss the merits of all whose names are before the public, and decide which are the most suitable. This gin-and-water caucus it is, which practically determines the selection of candidates; and, by consequence, the elections. Those who will succumb to leadership—those who will merge their private opinions in the policy of their party, of course have the preference. Men too independent for this—too far-seeing to join in the shibboleth of the hour, or too refined to mix with the “jolly good fellows” who thus rule the town, are shelved; notwithstanding that they are, above all others, fitted for office. Partly from this underhand influence, and partly from the consequent disgust which leads them to decline standing if asked, the best men are generally not in the governing body. It is notorious that in London, the most respectable merchants will have nothing to do with the local government. And in New York, “the exertions of its better citizens are still exhausted in private accumulation, while the duties of administration are left to other hands.” It cannot then be asserted that in town-government, the representative

system succeeds in bringing the ablest and most honourable men to the top.

The efficient and economical discharge of duties is, of course, hindered by this inferiority of the deputies chosen; and it is yet further hindered by the persistent action of party and personal motives. Not whether he knows well how to handle a level, but whether he voted for the popular candidate at the last parliamentary election, is the question on which may, and sometimes does, hang the choice of a town-surveyor; and if sewers are ill laid out, it is a natural consequence. When, a new public edifice having been decided on, competition designs are advertised for; and when the designs, ostensibly anonymous but really identifiable, have been sent in; T. Square, Esq., who has an influential relative in the corporation, makes sure of succeeding, and is not disappointed: albeit his plans are not those which would have been chosen by any one of the judges, had the intended edifice been his own. Brown, who has for many years been on the town-council, and is one of the dominant clique, has a son who is a doctor; and when, in pursuance of an Act of Parliament, an officer of health is to be appointed, Brown privately canvasses his fellow-councillors, and succeeds in persuading them to elect his son; though his son is by no means the fittest man the place can furnish. Similarly with the choice of tradesmen to execute work for the town. A public clock that is frequently getting out of order, and Board-of-Health water-closets which disgust those who have them (we state facts), sufficiently testify that stupidity, favouritism, or some sinister influence, is ever causing mismanagement. The choice of inferior representatives, and by them of inferior *employés*, joined with private interest and divided responsibility, inevitably prevent the discharge of duties from being satisfactory.

Moreover, the extravagance which is now becoming a notorious vice of municipal bodies, is greatly increased by the practice of undertaking things which they ought not to

undertake; and the incentive to do this is, in many cases, traceable to the representative origin of the body. The system of compounding with landlords for municipal rates, leads the lower class of occupiers into the error that town-burdens do not fall on them; and they therefore approve of an expenditure which seemingly gives them gratis advantages. As they form the mass of the constituency, lavishness becomes a popular policy; and popularity-hunters vie with each other in bringing forward new and expensive projects. Here is a councillor who, having fears about his next election, proposes an extensive scheme for public gardens—a scheme which many who disapprove do not oppose, because they, too, bear in mind the next election. There is another councillor, who keeps a shop, and who raises and agitates the question of baths and wash-houses; very well knowing that his trade is not likely to suffer from such a course. And so in other cases: the small direct interest which each member of the corporation has in economical administration, is antagonized by so many indirect interests of other kinds, that he is not likely to be a good guardian of the public purse.

Thus, neither in respect of the deputies chosen, the efficient performance of their work, nor the avoidance of unfit work, can the governments of our towns be held satisfactory. And if in these recently-formed bodies the defects are so conspicuous, still more conspicuous are they where they have had time to grow to their full magnitude: witness the case of New York. According to the *Times* correspondent in that city, the New York people pay “over a million and a half sterling, for which they have badly-paved streets, a police by no means as efficient as it should be, though much better than formerly, the greatest amount of dirt north of Italy, the poorest cab-system of any metropolis in the world, and only unsheltered wooden piers for the discharge of merchandize.”

And now, having glanced at the general bearings of the question in these minor cases, let us take the major case of

our central government; and in connexion with it, pursue the inquiry more closely. Here the inherent faults of the representative system are still more clearly displayed. The greater multiplicity of rulers involves greater cumbrousness, greater confusion and delay. Differences of class, of aims, of prejudices, are both larger in number and wider in degree; and hence arise dissensions still more multiplied. The direct effect which each legislator is likely to experience from the working of any particular measure, is usually very small and remote; while the indirect influences that sway him are, in this above all other cases, numerous and strong; whence follows a marked tendency to neglect public welfare for private advantage. But let us set out from the beginning—with the constituencies.

The representative theory assumes that if a number of citizens, deeply interested as they all are in good government, be endowed with political power, they will choose the wisest and best men for governors. Seeing how greatly they must suffer from bad administration of public affairs and benefit from good, it is considered self-evident that they must have the *will* to select proper representatives; and it is further taken for granted that average common sense gives the *ability* to select proper representatives. How does experience bear out these assumptions? Does it not to a great degree negative them?

We find several considerable classes of electors who have little or no *will* in the matter. Not a few of those on the register pique themselves on taking no part in politics—claim credit for having the sense not to meddle with things that do not concern them. Many others there are whose interests in the choice of a member of Parliament are so slight, that they do not think it worth while to vote. A notable proportion, too, shopkeepers especially, care so little about the result, that their votes are determined by their wishes to please their chief patrons. In the minds of a yet larger class, small sums of money, or even *ad libitum* supplies of beer, outweigh any

desires they have to use their political powers independently. Those who adequately recognize the importance of honestly exercising their judgments in the selection of legislators, and who give conscientious votes, form but a minority; and the election usually hangs less upon their wills than upon the indirect and illegitimate influences which sway the rest.

Then, again, as to intelligence. Even supposing that the mass of electors have a sufficiently decided *will* to choose the best rulers, what evidence have we of their *ability*? Is picking out the wisest man among them, a task within the range of their capacities? Let any one listen to the conversation of a farmer's market-table, and then answer how much he finds of that wisdom which is required to discern wisdom in others. Or let him read the clap-trap speeches made from the hustings with a view of pleasing constituents, and then estimate the penetration of those who are to be so pleased. Even among the higher order of electors he will meet with gross political ignorance—with notions that Acts of Parliament can do whatever it is thought well they should do; that the value of gold can be fixed by law; that distress can be remedied by poor-laws; and so forth. If he descends a step, he will find in the still-prevalent ideas that machinery is injurious to the working-classes, and that extravagance is "good for trade," indices of a yet smaller insight. And in the lower and larger class, formed by those who think that their personal interest in good government is not worth the trouble of voting, or is outbalanced by the loss of a customer, or is of less value than a bribe, he will perceive an almost hopeless stupidity. Without going the length of Mr. Carlyle, and defining the people as "twenty-seven millions, mostly fools," he will yet confess that they are but very sparsely gifted with wisdom.

That these should succeed in choosing from out their number the fittest governors, would be strange; and that they do not so succeed is manifest. Even as judged by the most

common-sense tests, their selections are absurd, as we shall shortly see.

It is a self-evident truth that we may most safely trust those whose interests are identical with our own ; and that it is very dangerous to trust those whose interests are antagonistic to our own. All the legal securities we take in our transactions with each other, are so many recognitions of this truth. We are not satisfied with *professions*. If another's position is such that he must be liable to motives at variance with the promises he makes, we take care by introducing an artificial motive (the dread of legal penalties) to make it his interest to fulfil these promises. Down to the asking for a receipt, our daily business-habits testify that, in consequence of the prevailing selfishness, it is extremely imprudent to expect men to regard the claims of others equally with their own ;—all asseverations of good faith notwithstanding. Now, it might have been thought that even the modicum of sense possessed by the majority of electors, would have led them to recognize this fact in the choice of their representatives. But they show a total disregard of it. While the theory of our Constitution, in conformity with this same fact, assumes that the three divisions composing the Legislature will severally pursue each its own ends—while our history shows that Monarch, Lords, and Commons, *have* all along more or less conspicuously done this ; our electors manifest by their votes, the belief that their interests will be as well cared for by members of the titled class as by members of their own class. Though, in their determined opposition to the Reform-Bill, the aristocracy showed how greedy they were, not only of their legitimate power, but of their illegitimate power—though by the enactment and pertinacious maintenance of the Corn-Laws, they proved how little popular welfare weighed in the scale against their own profit—though they have ever displayed a watchful jealousy even of their smallest privileges, whether equitable or inequitable (as witness the recent complaint in the House of Lords, that the Mercantile



Marine Act calls on lords of manors to show their titles before they can claim the wrecks thrown on the shores of their estates, which before they had always done by prescription)—though they have habitually pursued that self-seeking policy which men so placed were sure to pursue; yet constituencies have decided that members of the aristocracy may fitly be chosen as representatives of the people. Our present House of Commons contains 98 Irish peers and sons of English peers; 66 blood-relations of peers; and 67 connexions of peers by marriage: in all, 231 members whose interests or sympathies, or both, are with the nobility rather than the commonalty. We are quite prepared to hear the doctrine implied in this criticism, condemned by rose-water politicians as narrow and prejudiced. To such we simply reply, that they and their friends fully recognize this doctrine when it suits them to do so. What is the meaning of their wish to prevent the town-constituencies from predominating over the county-ones; if it does not imply the belief that each division of the community will consult its own welfare? Or what plea can there be for Lord John Russell's proposal to represent minorities; unless it be the plea that those who have the opportunity will sacrifice the interests of others to their own? Or how shall we explain the anxiety of the upper class to keep a tight rein on the growing power of the lower class, save from their consciousness that *bonâ fide* representatives of the lower class would be less regardful of their privileges than they are themselves? The truth is plain enough, even for a child to comprehend. If there be any reason in the theory of the Constitution, then, while the members of the House of Peers should belong to the peerage, the members of the House of Commons should belong to the commonalty. Either the constitutional theory is sheer nonsense, or else the choice of lords as representatives of the people proves the folly of constituencies.

But this folly by no means ends here: it works out other results quite as absurd. What should we think of a man

giving his servants equal authority with himself over the affairs of his household ? Suppose the shareholders in a railway-company were to elect, as members of their board of directors, the secretary, engineer, superintendent, traffic-manager, and others such. Should we not be astonished at their stupidity ? Should we not prophesy that the private advantage of officials would frequently override the welfare of the company ? Yet our parliamentary electors commit a blunder of just the same kind. For what are military and naval officers but servants of the nation ; standing to it in a relation like that in which the officers of a railway-company stand to the company ? Do they not perform public work ? do they not take public pay ? And do not their interests differ from those of the public, as the interests of the employed from those of the employer ? The impropriety of admitting executive agents of the State into the Legislature, has over and over again thrust itself into notice ; and in minor cases has been prevented by sundry Acts of Parliament. Enumerating those disqualified for the House of Commons, Blackstone says—

“No person concerned in the management of any duties or taxes created since 1692, except the commissioners of the treasury, nor any of the officers following, (*viz.*, commissioners of prizes, transports, sick and wounded, wine licences, navy, and victualling ; secretaries and receivers of prizes ; comptrollers of the army accounts ; agents of regiments ; governors of plantations, and their deputies ; officers of Minorca or Gibraltar ; officers of the excise and customs ; clerks and deputies in the several offices of the treasury, exchequer, navy, victualling, admiralty, pay of the army and navy, secretaries of state, salt, stamps, appeals, wine licences, hackney coaches, hawkers and pedlars), nor any persons that hold any new office under the crown created since 1705, are capable of being elected, or sitting as members.”

In which list naval and military officers would doubtless have been included, had they not always been too powerful a body and too closely identified with the dominant classes. Glaring, however, as is the impolicy of appointing public servants to make the laws ; and clearly as this impolicy is recognized in the above-specified exclusions from time to time enacted ; the

people at large seem totally oblivious of it. At the last election they returned 9 naval officers, 46 military officers, and 51 retired military officers, who in virtue of education, friendship, and *esprit de corps*, take the same views with their active comrades—in all 106: not including 64 officers of militia and yeomanry, whose sympathies and ambitions are in a considerable degree the same. If any one thinks that this large infusion of officialism is of no consequence, let him look in the division-lists. Let him inquire how much it has had to do with the maintenance of the purchase-system. Let him ask whether the almost insuperable obstacles to the promotion of the private soldier, have not been strengthened by it. Let him see what share it had in keeping up those worn-out practices, and forms, and mis-arrangements, which entailed the disasters of our late war. Let him consider whether the hushing-up of the Crimean Inquiry, and the whitewashing of delinquents were not aided by it. Yet, though abundant experience thus confirms what common sense would beforehand have prophesied; and though, notwithstanding the late disasters, exposures, and public outcry for army-reform, the influence of the military caste is so great, that the reform has been staved-off; our constituencies are stupid enough to send to Parliament as many military officers as ever!

Not even now have we reached the end of these impolitic selections. The general principle on which we have been insisting, and which is recognized by expounders of the constitution when they teach that the legislative and executive divisions of the Government should be distinct—this general principle is yet further sinned against; though not in so literal a manner. For though they do not take State-pay, and are not nominally Government-officers, yet, practically, lawyers are members of the executive organization. They form an important part of the apparatus for the administration of justice. By the working of this apparatus they make their profits; and their welfare depends on its being so

worked as to bring them profits, rather than on its being so worked as to administer justice. Exactly as military officers have interests distinct from, and often antagonistic to, the efficiency of the army; so, barristers and solicitors have interests distinct from, and often antagonistic to, the simple, cheap, and prompt enforcement of the law. And that they are habitually swayed by these antagonistic interests, is notorious. It is not in human nature that they should be otherwise. So strong is the bias, as sometimes even to destroy the power of seeing from any other than the professional stand-point. We have ourselves heard a lawyer declaiming on the damage which the County-Courts-Act had done to the profession; and expecting his non-professional hearers to join him in condemning it there-for! And if, as all the world knows, the legal conscience is not of the tenderest, is it wise to depute lawyers to frame the laws which they will be concerned in carrying out; and the carrying out of which must affect their private incomes? Are barristers, who constantly take fees for work which they do not perform, and attorneys, whose bills are so often exorbitant that a special office has been established for taxing them—are these, of all others, to be trusted in a position which would be trying even to the most disinterested? Nevertheless, the towns and counties of England have returned to the present House of Commons 98 lawyers—some 60 of them in actual practice, and the rest retired, but doubtless retaining those class-views acquired during their professional careers.

These criticisms on the conduct of constituencies, do not necessarily commit us to the assertion that *none* belonging to the official and aristocratic classes ought to be chosen. Though it would be safer to carry out in these important cases, the general principle which, as above shown, Parliament has itself recognized and enforced in unimportant cases; yet we are not prepared to say that occasional exceptions might not be made, on good cause being shown. All we aim to show is, the gross impolicy of selecting so large a propor-

tion of representatives from classes having interests different from those of the general public. That in addition to more than a third taken from the dominant class, who already occupy one division of the Legislature, the House of Commons should contain nearly another third taken from the naval, military, and legal classes, whose policy, like that of the dominant class, is to maintain things as they are; we consider a decisive proof of electoral misjudgment. That out of the 654 members, of which the People's House now consists, there should be but 250 who, as considered from a class point of view, are eligible, or tolerably eligible (for we include a considerable number who are more or less objectionable), is significant of anything but popular good sense. That into an assembly established to protect their interests, the commonalty of England should have sent one-third whose interests are the same as their own, and two-thirds whose interests are at variance with their own, proves a scarcely credible lack of wisdom; and seems an awkward fact for the representative theory.

If the intelligence of the mass is thus not sufficient even to choose out men who by position and occupation are fit representatives, still less is it sufficient to choose out men who are the fittest in character and capacity. To see who will be liable to the bias of private advantage is a very easy thing; to see who is wisest is a very difficult thing; and those who do not succeed in the first must necessarily fail in the last. The higher the wisdom, the more incomprehensible does it become by ignorance. It is a manifest fact that the popular man or writer, is always one who is but little in advance of the mass, and consequently understandable by them: never the man who is far in advance of them, and out of their sight. Appreciation of another implies some community of thought. "Only the man of worth can recognize worth in men. . . . The worthiest, if he appealed to universal suffrage, would have but a poor chance. . . . Alas! Jesus Christ, asking the Jews what *he* deserved—was not the

answer, Death on the gallows!" And though men do not now-a-days stone the prophet, they, at any rate, ignore him. As Mr. Carlyle says in his vehement way—

"If of ten men nine are recognisable as fools, which is a common calculation, how, in the name of wonder, will you ever get a ballot-box to grind you out a wisdom from the votes of these ten men? . . . . I tell you a million blockheads looking authoritatively into one man of what you call genius, or noble sense, will make nothing but nonsense out of him and his qualities, and his virtues and defects, if they look till the end of time."

So that, even were electors content to choose the man proved by general evidence to be the most far-seeing, and refrained from testing him by the coincidence of his views with their own, there would be small chance of their hitting on the best. But judging of him, as they do, by asking him whether he thinks this or that crudity which they think, it is manifest that they will fix on one far removed from the best. Their deputy will be truly representative;—representative, that is, of the average stupidity.

And now let us look at the assembly of representatives thus chosen. Already we have noted the unfit composition of this assembly as respects the interests of its members; and we have just seen what the representative theory itself implies as to their intelligence. Let us now, however, consider them more nearly under this last head.

And first, what is the work they undertake? Observe, we do not say, the work which they *ought* to do; but the work which they *propose* to do, and *try* to do. This comprehends the regulation of nearly all actions going on throughout society. Besides devising measures to prevent the aggression of citizens on each other, and to secure each the quiet possession of his own; and besides assuming the further function, also needful in the present state of mankind, of defending the nation as a whole against invaders; they unhesitatingly take on themselves to provide for countless wants, to cure countless ills, to oversee countless affairs. Out of the many beliefs

men have held respecting God, Creation, the Future, etc., they presume to decide which are true; and endow an army of priests to perpetually repeat them to the people. The distress inevitably resulting from improvidence, and the greater or less pressure of population on produce, they undertake to remove: they settle the minimum which each rate-payer shall give in charity; and how the proceeds shall be administered. Judging that emigration will not naturally go on fast enough, they provide means for carrying off some of the labouring classes to the colonies. Certain that social necessities will not cause a sufficiently rapid spread of knowledge, and confident that they know what knowledge is most required; they use public money for the building of schools and paying of teachers; they print and publish State-school-books; they employ inspectors to see that their standard of education is conformed to. Playing the part of doctor, they insist that every one shall use their specific, and escape the danger of small-pox by submitting to an attack of cow-pox. Playing the part of moralist, they decide which dramas are fit to be acted, and which are not. Playing the part of artist, they prompt the setting up of drawing-schools; provide masters and models; and, at Marlborough House, enact what shall be considered good taste, and what bad. Through their lieutenants, the corporations of towns, they furnish appliances for the washing of peoples' skins and clothes; they, in some cases, manufacture gas and put down water-pipes; they lay out sewers and cover over cess-pools; they establish public libraries and make public gardens. Moreover, they determine how houses shall be built, and what is a safe construction for a ship; they take measures for the security of railway-travelling; they fix the hour after which public-houses may not be open; they regulate the prices chargeable by vehicles plying in the London streets; they inspect lodging-houses; they arrange for town burial-grounds; they fix the hours of factory hands. In short, they aim to control and direct the entire national life. If

some social process does not seem to them to be going on fast enough, they stimulate it; where the growth is not in the mode or the direction which they think most desirable, they alter it; and so they seek to realize some undefined ideal community.

Such being the task undertaken, what, let us ask, are the qualifications for discharging it? Supposing it possible to achieve all this (which we do not), what must be the knowledge and capacities of those who shall achieve it? Successfully to prescribe for society, it is needful to know the structure of society—the principles on which it is organized—the natural laws underlying its progress. If there be not a true understanding of what constitutes social development, there must necessarily be grave mistakes made in checking these changes and fostering those. If there be lack of insight respecting the mutual dependence of the many functions which, taken together, make up the national life, unforeseen disasters will ensue from not perceiving how an interference with one will affect the rest. If there be no knowledge of the natural *consensus* at any time subsisting in the social organism, there will of course be bootless attempts to secure ends which do not consist with its passing phase of organization. Clearly, before any effort to regulate the myriad multiform changes going on in a community, can be rationally made, there must be an adequate comprehension of how these changes are caused, and in what way they are related to each other—how this entangled web of phenomena hangs together—how it came thus, and what it is becoming. That is to say, there must be a due acquaintance with the social science—the science involving all others; the science standing above all others in subtlety and complexity; the science which the highest intelligence alone can master.

And now, how far do our legislators possess this qualification? Do they in any moderate degree display it? Do they make even a distant approximation to it? That many of them are very good classical scholars is beyond doubt: not a



few have written first-rate Latin verses, and can enjoy a Greek play; but there is no obvious relation between a memory well stocked with the words talked two thousand years ago, and an understanding disciplined to deal with modern society. That in learning the languages of the past they have learnt some of its history, is true; but considering that this history is mainly a narrative of battles and intrigues and negotiations, it does not throw much light on social philosophy—not even the simplest principles of political economy have ever been gathered from it. We do not question, either, that a moderate per centage of members of Parliament are fair mathematicians; and that mathematical discipline is valuable. As, however, political problems are not susceptible of mathematical analysis, their studies in this direction cannot much aid them in legislation. To the large body of military officers who sit as representatives, we would not for a moment deny a competent knowledge of fortification, of strategy, of regimental discipline; but we do not see that these throw much light on the causes and cure of national evils. Indeed, considering that all war is anti-social, and that the government of soldiers is necessarily despotic; military education and habits are more likely to unfit than to fit men for regulating the doings of a free people. Extensive acquaintance with the laws, may doubtless be claimed by the many barristers and solicitors chosen by our constituencies; and this seems a kind of information having some relation to the work to be done. Unless, however, this information is more than technical—unless it is accompanied by a knowledge of the ramified consequences that laws have produced in times past, and are producing now (which nobody will assert); it cannot give much insight into Social Science. A familiarity with laws is no more a preparation for rational legislation, than would a familiarity with all the nostrums men have ever used, be a preparation for the rational practice of medicine. Nowhere, then, in our representative body, do we find appropriate culture. Here is a clever novelist, and there a successful

maker of railways ; this member has acquired a large fortune in trade, and that member is noted as an agricultural improver ; but none of these achievements imply fitness for controlling and adjusting social processes. Among the many who have passed through the public school and university *curriculum*—including though they may a few Oxford double-firsts and one or two Cambridge wranglers—there are none who have received the discipline required by the true legislator. None have that competent knowledge of Science in general, culminating in the Science of Life, which can alone form a basis for the Science of Society. For it is one of those open secrets which seem the more secret because they are so open, that all phenomena displayed by a nation are phenomena of Life, and are without exception dependent on the laws of Life. There is no growth, decay, evil, improvement, or change of any kind, going on in the body politic, but what has its original cause in the actions of human beings ; and there are no actions of human beings but what conform to the laws of Life in general, and cannot be truly understood until those laws are understood. We do not hesitate to assert that without a knowledge of the laws of Life, and a clear comprehension of the way in which they underlie and determine social growth and organization, the attempted regulation of social life must end in perpetual failures.

See, then, the immense incongruity between the end and the means. See on the one hand the countless difficulties of the gigantic task ; and on the other hand the almost total unpreparedness of those who undertake it. Need we wonder that legislation is ever breaking down ? Is it not natural that complaint, amendment, and repeal, should form the staple business of every session ? Is there anything more than might be expected in the absurd Jack-Cadeisms which almost nightly disgrace the debates ? Even without setting up so high a standard of qualification as that above specified, the unfitness of most representatives for their duties is abundantly manifest. You need but glance over the miscellaneous list of

noblemen, baronets, squires, merchants, barristers, engineers, soldiers, sailors, railway-directors, etc., and then ask what training their previous lives have given them for the intricate business of legislation, to see at once how extreme must be the incompetence. One would think that the whole system had been framed on the sayings of some political Dogberry :—

“The art of healing is difficult ; the art of government easy. The understanding of arithmetic comes by study ; while the understanding of society comes by instinct. Watchmaking requires a long apprenticeship ; but there needs none for the making of institutions. To manage a shop properly requires teaching ; but the management of a people may be undertaken without preparation.” Were we to be visited by some wiser Gulliver, or, as in the “Micromegas” of Voltaire, by some inhabitant of another sphere, his account of our political institutions might run somewhat as follows :—

“I found that the English were governed by an assembly of men, said to embody the ‘collective wisdom.’ This assembly, joined with some other authorities which seem practically subordinate to it, has unlimited power. I was much perplexed by this. With us it is customary to define the office of any appointed body ; and above all things to see that it does not defeat the ends for which it was appointed. But both the theory and the practice of this English Government, imply that it may do whatever it pleases. Though, by their current maxims and usages, the English recognize the right of property as sacred—though the infraction of it is considered by them one of the gravest crimes—though the laws profess to be so jealous of it as to punish even the stealing of a turnip ; yet their legislators suspend it at will. They take the money of citizens for any project which they choose to undertake ; though such project was not in the least contemplated by those who gave them authority—nay, though the greater part of the citizens from whom the money is taken had no share in giving them such authority. Each citizen can hold property only so long as the 654 deputies do not

want it. It seemed to me that an exploded doctrine once current among them of 'the divine right of kings,' had simply been changed into the divine right of Parliaments.

"I was at first inclined to think that the constitution of things on the Earth was totally different from what it is with us; for the current political philosophy here, implies that acts are not right or wrong in themselves, but become one or the other by the votes of law-makers. In our world it is considered manifest that if a number of beings live together, there must, in virtue of their natures, be certain primary conditions on which only they can work satisfactorily in concert; and that the conduct which breaks through these conditions is bad. In the English legislature, however, a proposal to regulate conduct by any such abstract standard would be held absurd. I asked one of their members of Parliament whether a majority of the House could legitimize murder. He said, No. I asked him whether it could sanctify robbery. He thought not. But I could not make him see that if murder and robbery are intrinsically wrong, and not to be made right by decisions of statesmen, that similarly *all* actions must be either right or wrong, apart from the authority of the law; and that if the right and wrong of the law are not in harmony with this intrinsic right and wrong, the law itself is criminal. Some, indeed, among the English think as we do. One of their remarkable men (*not* included in their Assembly of Notables) writes thus:—

"To ascertain better and better what the will of the Eternal was and is with us, what the laws of the Eternal are, all Parliaments, Ecumenic Councils, Congresses, and other Collective Wisdoms, have had this for their object. . . . Nevertheless, in the inexplicable universal votings and debates of these Ages, an idea or rather a dumb presumption to the contrary has gone idly abroad; and at this day, over extensive tracts of the world, poor human beings are to be found, whose practical belief it is that if we "vote" this or that, so this or that will thenceforth *be*. . . . Practically, men have come to imagine that the Laws of this Universe, like the laws of constitutional countries, are decided by voting. . . . It is an idle fancy. The Laws of this Universe, of which if the Laws of England are not

an exact transcript, they should passionately study to become such, are fixed by the everlasting congruity of things, and are not fixable or changeable by "voting!"

"But I find that, contemptuously disregarding all such protests, the English legislators persevere in their hyper-atheistic notion, that an Act of Parliament duly enforced by State-officers, will work out any object: no question being put whether Laws of Nature permit. I forgot to ask whether they considered that different kinds of food could be made wholesome or unwholesome by State-decree.

"One thing that struck me, was the curious way in which the members of their House of Commons judge of each others' capacities. Many who expressed opinions of the crudest kind, or trivial platitudes, or worn-out superstitions, were very civilly treated. Follies as great as that but a few years since uttered by one of their ministers, who said that free-trade was contrary to common sense, were received in silence. But I was present when one of their number, who as I thought was speaking very rationally, made a mistake in his pronunciation—made what they call a wrong quantity; and immediately there arose a shout of derision. It seemed quite tolerable that a member should know little or nothing about the business he was there to transact; but quite intolerable that he should be ignorant on a point of no moment.

"The English pique themselves on being especially practical—have a great contempt for theorizers, and profess to be guided exclusively by facts. Before making or altering a law, it is the custom to appoint a committee of inquiry, who send for men able to give information concerning the matter in hand, and ask them some thousands of questions. These questions, and the answers given to them, are printed in large books, and distributed among the members of the Houses of Parliament; and I was told that they spent about £100,000 a year in thus collecting and distributing evidence. Nevertheless, it appeared to me that the ministers and repre-

sentatives of the English people, pertinaciously adhere to theories long ago disproved by the most conspicuous facts. They pay great respect to petty details of evidence, but of large truths they are quite regardless. Thus, the experience of age after age, has shown that their state-management is almost invariably bad. The national estates are so miserably administered as often to bring loss instead of gain. The government ship-yards are uniformly extravagant and inefficient. The judicial system works so ill, that most citizens will submit to serious losses rather than run risks of being ruined by law-suits. Countless facts prove the Government to be the worst owner, the worst manufacturer, the worst trader: in fact, the worst manager, be the thing managed what it may. But though the evidence of this is abundant and conclusive—though during a recent war the bunglings of officials were as glaring and multitudinous as ever; yet the belief that any proposed duties will be satisfactorily discharged by a new public department appointed to them, seems not a whit the weaker. Legislators, thinking themselves practical, cling to the plausible theory of an officially-regulated society, spite of overwhelming evidence that official regulation perpetually fails.

“Nay, indeed, the belief seems to gain strength among these fact-loving English statesmen; notwithstanding the facts are against it. Proposals for State-control over this and the other, have been of late more rife than ever. And, most remarkable of all, their representative assembly lately listened with grave faces to the assertion, made by one of their high authorities, that State-workshops are more economical than private workshops. Their prime minister, in defending a recently-established arms-factory, actually told them that at one of their arsenals, certain missiles of war were manufactured not only better than by the trade, but at about one-third the price; and added, *‘so it would be in all things.’* The English being a trading people, who must be tolerably familiar with the usual rates of profit among manufacturers,

and the margin for possible economy, the fact that they should have got for their chief representative one so utterly in the dark on these matters, struck me as a wonderful result of the representative system.

“I did not inquire much further, for it was manifest that if these were really their wisest men, the English were not a wise people.”

Representative government, then, cannot be called a success, in so far as the choice of men is concerned. Those it puts into power are the fittest neither in respect of their interests, their culture, nor their wisdom. And as a consequence, partly of this and partly of its complex and cumbrous nature, representative government is anything but efficient for administrative purposes. In these respects it is manifestly inferior to monarchical government. This has the advantage of simplicity; which is always conducive to efficiency. And it has the further advantage that the power is in the hands of one who is directly concerned in the good management of national affairs: seeing that the continued maintenance of his power—nay, often his very life—depends on this. For his own sake a monarch chooses the wisest councillors he can find, regardless of class-distinctions. His interest in getting the best help, is too great to allow of prejudices standing between him and a far-seeing man. We see this abundantly illustrated. Did not the kings of France take Richelieu, and Mazarin, and Turgot to assist them? Had not Henry VIII. his Wolsey, Elizabeth her Burleigh, James his Bacon, Cromwell his Milton? And were not these men of greater calibre than those who hold the reins under our constitutional *régime*? So strong is the motive of an autocrat to make use of ability wherever it exists, that he will take even his barber into council if he finds him a clever fellow. Besides choosing them for ministers and advisers, he seeks out the most competent men for other offices. Napoleon raised his marshals from the ranks; and owed his military success in great part

to the readiness with which he saw and availed himself of merit wherever found. We have recently seen in Russia, how prompt was the recognition and promotion of engineering talent in the case of Todtleben; and know to our cost how greatly the prolonged defence of Sebastopol was due to this. In the marked contrast to these cases supplied by our own army, in which genius is ignored while muffs are honoured—in which wealth and caste make the advance of plebeian merit next to impossible—and in which jealousies between Queen's service and Company's service render the best generalship almost unavailable—we see that the representative system fails in the officering of its executive, as much as in the officering of its legislative. A striking antithesis between the actions of the two forms of government, is presented in the evidence given before the Sebastopol Committee respecting the supply of huts to the Crimean army—evidence showing that while, in his negotiations with the English Government, the contractor for the huts met with nothing but vacillation, delay, and official rudeness; the conduct of the French Government was marked by promptitude, decision, sound judgment, and great civility. Everything goes to show that for administrative efficiency, autocratic power is the best. If your aim is a well-organized army—if you want to have sanitary departments, and educational departments, and charity-departments, managed in a business-like way—if you would have society actively regulated by staffs of State-agents; then by all means choose that system of complete centralization which we call despotism.

Probably, notwithstanding the hints dropped at the outset, most have read the foregoing pages with surprise. Very likely some have referred to the cover of the *Review*, to see whether they have not, in mistake, taken up some other than the "*Westminster*;" while some may, perhaps, have accompanied their perusal by a running commentary of epithets condemnatory of our seeming change of principles. Let them



not be alarmed. We have not in the least swerved from the confession of faith set forth in our prospectus. On the contrary, as we shall shortly show, our adhesion to free institutions is as strong as ever—nay, has even gained strength through this apparently antagonistic criticism.

The subordination of a nation to a man, is not a wholesome but a vicious state of things: needful, indeed, for a vicious humanity; but to be outgrown as fast as may be. The instinct which makes it possible is anything but a noble one. Call it “hero-worship,” and it looks respectable. Call it what it is—a blind awe and fear of power, no matter of what kind, but more especially of the brutal kind; and it is by no means to be admired. Watch it in early ages deifying the cannibal chief; singing the praises of the successful thief; commemorating the most bloodthirsty warriors; speaking with reverence of those who had shown undying revenge; and erecting altars to such as carried furthest the vices which disgrace humanity; and the illusion disappears. Read how, where it was strongest, it immolated crowds of victims at the tomb of the dead king—how, at the altars raised to its heroes, it habitually sacrificed prisoners and children to satisfy their traditional appetite for human flesh—how it produced that fealty of subjects to rulers which made possible endless aggressions, battles, massacres, and horrors innumerable—how it has mercilessly slain those who would not lick the dust before its idols;—read all this, and the feeling no longer seems so worthy an one. See it in later days idealizing the worst as well as the best monarchs; receiving assassins with acclamation; hurraing before successful treachery; rushing to applaud the processions and shows and ceremonies where-with effete power strengthens itself; and it looks far from laudable. Autocracy-presupposes inferiority of nature on the part of both ruler and subject: on the one side a cold, unsympathetic sacrificing of other’s wills to self-will; on the other side a mean, cowardly abandonment of the claims of manhood. Our very language bears testimony to this. Do

not *dignity*, *independence*, and other words of approbation, imply a nature at variance with this relation? Are not *tyrannical*, *arbitrary*, *despotic*, epithets of reproach? and are not *truckling*, *fawning*, *cringing*, epithets of contempt? Is not *slavish* a condemnatory term? Does not *servile*, that is, serf-like, imply littleness, meanness? And has not the word *villain*, which originally meant bondsman, come to signify everything which is hateful? That language should thus inadvertently embody the dislike of mankind for those who most display the instinct of subordination, is alone sufficient proof that this instinct is associated with evil dispositions. It has been the parent of countless crimes. It is answerable for the torturing and murder of the noble-minded who would not submit—for the horrors of Bastiles and Siberias. It has ever been the represser of knowledge, of free thought, of true progress. In all times it has fostered the vices of courts, and made those vices fashionable throughout nations. With a George IV. on the throne, it weekly tells ten thousand lies, in the shape of prayers for a “most religious and gracious king.” And even now it is daily guilty of falsehood, in selling and buying portraits which every one knows to be utterly untrue. Whether you read the annals of the far past—whether you look at the various uncivilized races dispersed over the globe—or whether you contrast the existing nations of Europe; you equally find that submission to authority decreases as morality and intelligence increase. From ancient warrior-worship down to modern flunkeyism, the sentiment has ever been strongest where human nature has been vilest.

This relation between barbarism and loyalty, is one of those beneficent arrangements which “the servant and interpreter of nature” everywhere meets with. The subordination of many to one, is a form of society needful for men so long as their natures are savage, or anti-social; and that it may be maintained, it is needful that they should have an extreme awe of the one. Just in proportion as their conduct to each

other is such as to breed perpetual antagonism, endangering social union; just in that proportion must there be a reverence for the strong, determined, cruel ruler, who alone can repress their explosive natures, and keep them from mutual destruction. Among such a people any form of free government—presupposing as it does some share of equitable feeling and self-control in those concerned—is an impossibility: there must be a despotism as stern as the people are savage; and that such a despotism may exist, there must be a superstitious worship of the despot. But as fast as the discipline of social life modifies the human character—as fast as, through lack of use the old predatory, aggressive instincts dwindle—as fast as, by constant exercise, the sympathetic feelings grow; so fast does this hard rule become less necessary; so fast does the authority of the ruler diminish; so fast does the awe of him disappear. From being originally god, or demi-god, he comes at length to be a very ordinary person; liable to be criticized, ridiculed, caricatured. Various influences conspire to this result. Accumulating knowledge gradually divests the ruler of those supernatural attributes at first ascribed to him. The conceptions which developing science gives of the grandeur of creation, as well as the constancy and irresistibility of its Omnipresent Cause, make all feel the comparative littleness of human power; and the awe once felt for the great man, is, by degrees, transferred to that Universe of which the great man is seen to form but an insignificant part. Continued increase of population, with its average percentage of great men, involves the comparative frequency of such; and the more numerous they are, the less respect can be given to each: they dwarf each other. As society gets settled and organized, its welfare and progress become more and more independent of any one. In a primitive society, the death of a chief may alter the whole course of things; but in a society like ours, things go on much as before, no matter who dies. Thus, many influences combine to diminish autocratic power, whether political or other. It

is true, not only in the sense in which Tennyson writes it, but also in a higher sense, that—

“The individual withers, and the world is more and more.”

Further, it is to be noted that while the unlimited authority of the greatest man ceases to be needful; and while the superstitious awe which upholds that unlimited authority dwindles; it at the same time becomes impossible to get the greatest man to the top. In a rude social state, where might is right, where war is the business of life, where the qualities required in the ruler, alike for controlling his subjects and defeating his enemies, are bodily strength, courage, cunning, will, it is easy to pick out the best; or rather—he picks himself out. The qualities which make him the fittest governor for the barbarians around him, are the qualities by which he gets the mastery over them. But, in an advanced, complex, and comparatively peaceful state like ours, these are not the qualities needed (and even were they needed, the firmly-organized arrangements of society do not allow the possessor of them to break through to the top). For the rule of a settled, civilized community, the characteristics required are—not a love of conquest, but a desire for the general happiness; not undying hate of enemies, but a calm dispassionate equity; not artful manœuvring, but philosophic insight. How is the man most endowed with these to be found? In no country is he ordinarily born heir to the throne; and that he can be chosen out of thirty millions of people none will be foolish enough to think. The incapacity for recognizing the greatest worth, we have already seen illustrated in our parliamentary elections. And if the few thousands forming a constituency, cannot pick out from among themselves their wisest man; still less can the millions forming a nation do it. Just as fast as society becomes populous, complex, peaceful; so fast does the political supremacy of the best become impossible.

But even were the relation of autocrat and slave a morally wholesome one; and even were it possible to find the fittest

man to be autocrat ; we should still contend that such a form of government is bad. We should not contend this simply on the ground that self-government is a valuable educator. But we should take the ground that no human being, however wise and good, is fit to be sole ruler over the doings of an involved society ; and that, with the best intentions, a benevolent despot is very likely to produce the most terrible mischiefs, which would else have been impossible. We will take the case of all others the most favourable to those who would give supreme power to the best. We will instance Mr. Carlyle's model hero—Cromwell. Doubtless there was much in the manners of the times when Puritanism arose, to justify its disgust. Doubtless the vices and follies bequeathed by effete Catholicism still struggling for existence, were bad enough to create a reactionary asceticism. It is in the order of Nature, however, that men's habits and pleasures are not to be changed suddenly. For any *permanent* effect to be produced, it must be produced slowly. Better tastes, higher aspirations, must be developed ; not enforced from without. Disaster is sure to result from the withdrawal of lower gratifications before higher ones have taken their place ; for gratification of some kind is a condition to healthful existence. Whatever ascetic morality, or rather immorality, may say, pleasures and pains are the incentives and restraints by which Nature keeps her progeny from destruction. No contemptuous title of "pig-philosophy" will alter the eternal fact, that Misery is the highway to Death ; while Happiness is added Life, and the giver of Life. But indignant Puritanism could not see this truth ; and with the extravagance of fanaticism sought to abolish pleasure in general. Getting into power, it put down not only questionable amusements, but all others along with them. And for these repressions, Cromwell, either as enacting, maintaining, or allowing them, was responsible. What, now, was the result of this attempt to drag on men into virtue ? What came when the strong man, who thought he was thus "helping God to mend all,"

died? A dreadful reaction brought in one of the most degraded periods of our history. Into the newly-garnished house entered "seven other spirits more wicked than the first." For generations the English character was lowered: vice was gloried in, virtue was ridiculed; dramatists made marriage the stock-subject of laughter; profaneness and obscenity flourished; high aspirations ceased; the whole age was corrupt. Not until George III. reigned was there a better standard of living. And for this century of demoralization we have, in great measure, to thank Cromwell. Is it, then, so clear that the domination of one man, righteous though he may be, is a blessing?

Lastly, it is to be remarked that when the political supremacy of the greatest no longer exists in an overt form, it still continues in a disguised and more beneficent form. For is it not manifest, that in these latter days the wise man eventually gets his edicts enforced by others, if not by himself. Adam Smith, from his chimney-corner, dictated greater changes than prime ministers do. A General Thompson who forges the weapons with which the Anti-Corn-Law battle is fought—a Cobden and a Bright who add to and wield them, forward civilization much more than those who hold sceptres. Repugnant as the fact may be to statesmen, it is yet one which cannot be gainsayed. Whoever, to the great effects already produced by Free-trade, joins the far greater effects that will be hereafter produced, not only on ourselves but on all the other nations who must adopt our policy, must see that the revolution initiated by these men is far wider than has been initiated by any potentate of modern times. As Mr. Carlyle very well knows, those who elaborate new truths and teach them to their fellows, are now-a-days the real rulers—"the unacknowledged legislators"—the virtual kings. From afar off, those who sit on thrones and form cabinets are perceived to be but the servants of such. And then note that the power thus indirectly exercised, is no longer a dangerous one; but one that is almost uniformly beneficial.

For when, as with ourselves, the dicta of the Thinker cannot get established in law until after a long battle of opinion—when they have to prove their fitness for the Time by conquering Time; we have a guarantee that no great changes which are ill-considered or premature can be brought about. We have the good which great men can do us, while we are saved from the evil.

No; the old regime has passed away, never to return. For ourselves at least, the subordination of the many to the one, has become alike needless, repugnant, and impossible. Good for its time, bad for ours, the ancient "hero-worship" is dead; and happily no declamations, be they never so eloquent, can revive it.

Here seem to be two irreconcilable positions—two mutually-destructive arguments. First, a condemnatory criticism on representative government, and then a still more condemnatory criticism on monarchical government: each apparently abolishing the other.

Nevertheless, the paradox is easily explicable. It is quite possible to say all that we have said concerning the defects of representative government, and still to hold that it is the best form of government. Nay, it is quite possible to derive a more profound conviction of its superiority from the very evidence which appears so unfavourable to it.

For nothing that we have urged tells against its goodness as a means of securing justice between man and man, or class and class. Abundant evidence shows that the maintenance of equitable relations among its subjects, which forms the essential business of a ruling power, is surest when the ruling power is of popular origin; notwithstanding the defects to which such a ruling power is liable. For discharging the true function of a government, representative government is shown to be the best, alike by its *origin*, its *theory*, and its *results*. Let us glance at the facts under these three heads.

Alike in Spain, in England, and in France, popular power

embodied itself as a check upon kingly tyranny, that is—kingly injustice. The earliest accounts we have of the Spanish Cortes, say that it was their office to advise the King; and to follow their advice was his duty. They petitioned, remonstrated, complained of grievances, and supplicated for redress. The King, having acceded to their requirements, swore to observe them; and it was agreed that any act of his in contravention of the statutes thus established, should be “respected as the King’s commands, but not executed, as contrary to the rights and privileges of the subject.” In all which we see very clearly that the special aim of the Cortes was to get rectified the injustices committed by the King or others; that the King was in the habit of breaking the promises of amendment he made to them; and that they had to adopt measures to enforce the fulfilment of his promises. In England we trace analogous facts. The Barons who bridled the tyranny of King John, though not formally appointed, were virtually impromptu representatives of the nation; and in their demand that justice should neither be sold, denied, nor delayed, we discern the social evils which led to this taking of the power into their own hands. In early times the knights and burgesses, summoned by the King with the view of getting supplies from them, had for their especial business to obtain from him the redress of grievances, that is—the execution of justice; and in their eventually-obtained and occasionally-exercised power of withholding supplies until justice was granted, we see both the need there was for remedying the iniquities of autoeracy, and the adaptation of representative institutions to this end. And the further development of popular power latterly obtained, originated from the demand for fairer laws—for less class-privilege, class-exemption, class-injustice: a fact which the speeches of the Reform-Bill agitation abundantly prove. In France, again, representative government grew into a definite form under the stimulus of unbearable oppression. When the accumulated extortion of centuries had reduced the mass



of the people to misery—when millions of haggard faces were seen throughout the land—when starving complainants were hanged on “a gallows forty feet high”—when the exactions and cruelties of good-for-nothing kings and vampyre-nobles had brought the nation to the eve of dissolution ; there came, as a remedy, an assembly of men elected by the people.

That, considered *à priori*, representative government is fitted for establishing just laws, is implied by the unanimity with which Spanish, English, and French availed themselves of it to this end ; as well as by the endeavours latterly made by other European nations to do the like. The *rationale* of the matter is simple enough. Manifestly, on the average of cases, a man will protect his own interests more solicitously than others will protect them for him. Manifestly, where regulations have to be made affecting the interests of several men, they are most likely to be equitably made when all those concerned are present, and have equal shares in the making of them. And manifestly, where those concerned are so numerous and so dispersed, that it is physically impossible for them all to take part in the framing of such regulations, the next best thing is for the citizens in each locality to appoint one of their number to speak for them, to care for their claims, to be their representative. The general principle is, that the welfare of all will be most secure when each looks after his own welfare ; and the principle is carried out as directly as the circumstances permit. It is inferable, alike from human nature and from history, that a single man cannot be trusted with the interests of a nation of men, where his real or imagined interests clash with theirs. It is similarly inferable from human nature and from history, that no small section of a nation, as the nobles, can be expected to consult the welfare of the people at large in preference to their own. And it is further inferable that only in a general diffusion of political power, is there a safeguard for the general welfare. This has all along been the conviction under which representative government has been advocated, maintained,

and extended. From the early writs that summoned the members of the House of Commons—writs which declared it to be a most equitable rule that the laws which concerned all should be approved of by all—down to the reasons now urged by the unenfranchised for a participation in political power ; this is the implied theory. Observe, nothing is said about wisdom or administrative ability. From the beginning, the end in view has been *justice*. Whether we consider the question in the abstract, or whether we examine the opinions men have entertained upon it from old times down to the present day, we equally see the theory of representative government to be, that it is the best means of insuring equitable social relations.

And do not the results justify the theory ? Did not our early Parliaments, after long-continued struggles, succeed in curbing the licentious exercise of royal power ; and in establishing the rights of the subject ? Are not the comparative security and justice enjoyed under our form of government, indicated by the envy with which other nations regard it ? Was not the election of the French Constituent Assembly followed by the sweeping away of the grievous burdens that weighed down the people—by the abolition of tithes, seignorial dues, gabelle, excessive preservation of game—by the withdrawal of numerous feudal privileges and immunities—by the manumission of the slaves in the French colonies ? And has not that extension of our own electoral system embodied in the Reform-Bill, brought about more equitable arrangements ?—as witness the repeal of the Corn-Laws, and the equalization of probate and legacy duties. The proofs are undeniable. It is clear, both *à priori* and *à posterieri*, that representative government is especially adapted for the establishment and maintenance of just laws.

And now mark that the objections to representative government awhile since urged, scarcely tell against it at all, so long as it does not exceed this comparatively limited function. Though its mediocrity of intellect makes

it incompetent to oversee and regulate the countless involved processes which make up the national life; it nevertheless has quite enough intellect to enact and enforce those simple principles of equity which underlie the right conduct of citizens to each other. These are such that the commonest minds in a civilized community can understand their chief applications. Stupid as may be the average elector, he can see the propriety of such regulations as shall prevent men from murdering and robbing each other; he can understand the fitness of laws which enforce the payment of debts; he can perceive the need of measures to prevent the strong from tyrannizing over the weak; and he can feel the rectitude of a judicial system that is the same for rich and poor. The average representative may be but of small capacity, but he is competent, under the leadership of his wiser fellows, to devise appliances for carrying out these necessary restraints; or rather—he is competent to uphold the set of appliances slowly elaborated by the many generations of his predecessors, and to do something towards improving and extending them in those directions where the need is most manifest. It is true that even these small demands upon electoral and senatorial wisdom are but imperfectly met. But though constituencies are blind to the palpable truth, that if they would escape laws which favour the nobility at the expense of the commonalty, they must cease to choose representatives from among the nobility; yet when the injustice of this class-legislation is glaring—as in the case of the Corn-Laws—they have sense enough to use means for getting it abolished. And though most legislators have not sufficient penetration to perceive that the greater part of the evils which they attempt to cure by official inspection and regulation, would disappear were there a certain, prompt, and cheap administration of justice; yet, the County-Courts-Act, and other recent law-reforms, show that they do eventually recognize the importance of more efficient judicial arrangements. While, therefore, the lower average of intel-

ligence which necessarily characterizes representative government, unfits it for discharging the complex business of regulating the entire national life; it does not unfit it for discharging the comparatively simple duties of protector. Again, in respect of this original, all-essential function of a government, there is a much clearer identity of interest between representative and citizen, than in respect of the multitudinous other functions which governments undertake. Though it is generally of but little consequence to the member of Parliament whether state-teachers, state-preachers, state-officers of health, state-dispensers of charity, etc., do their work well; it is of great personal consequence to him that life and property should be secure: and hence he is more likely to care for the efficient administration of justice, than for the efficient administration of anything else. Moreover, the complexity, incongruity of parts, and general cumbrousness which deprive a representative government of that activity and decision required for paternally-superintending the affairs of thirty millions of citizens; do not deprive it of the ability to establish and maintain the regulations by which these citizens are prevented from trespassing against each other. For the principles of equity are permanent as well as simple; and once having been legally embodied in their chief outlines, all that devolves on a government is to develop them more perfectly, and improve the appliances for enforcing them: an undertaking for which the slow and involved action of a representative government does not unfit it. So that while by its origin, theory, and results, representative government is shown to be the best for securing justice between class and class, as well as between man and man; the objections which so strongly tell against it in all its other relations to society, do not tell against it in this fundamental relation.

Thus, then, we reach the solution of the paradox. Here is the reconciliation between the two seemingly-contradictory positions awhile since taken. — To the question—What is representative government good for? our reply is—It is

good, especially good, good above all others, for doing the thing which a government should do. It is bad, especially bad, bad above all others, for doing the things which a government should not do.

One point remains. We said, some distance back, that not only may representative government be the best, notwithstanding its many conspicuous deficiencies; but that it is even possible to discern in these very deficiencies further proofs of its superiority. The conclusion just arrived at, implying, as it does, that these deficiencies tend to hinder it from doing the things which no government should do, has already furnished a key to this strange-looking assertion. But it will be well here to make a more specific justification of it. This brings us to the pure science of the matter.

The ever-increasing complexity which characterizes advancing societies, is a complexity that results from the multiplication of different parts performing different duties. The doctrine of the division of labour, is now-a-days understood by most to some extent; and most know that by this division of labour, each operative, each manufacturer, each town, each district, is constantly more and more restricted to one kind of work. Those who study the organization of living bodies, find the uniform process of development to be, that each organ gradually acquires a definite and limited function: there arises, step by step, a more perfect "physiological division of labour." And in an article on "Progress: its Law and Cause," published in our April number, we pointed out that this increasing specialization of functions which goes on in all organized bodies, social as well as individual, is one of the manifestations of a still more general process pervading creation, inorganic as well as organic.

Now this specialization of functions, which is the law of all organization, has a twofold implication. At the same time that each part grows adapted to the particular duty it has to discharge, it grows unadapted to all other duties. The

becoming especially fit for one thing, is a becoming less fit than before for everything else. We have not space here to exemplify this truth. Any modern work on physiology, however, will furnish the reader with abundant illustrations of it, as exhibited in the evolution of living creatures; and as exhibited in the evolution of societies, it may be studied in the writings of political economists. All which we wish here to point out is, that the governmental part of the body politic exemplifies this truth equally with its other parts. In virtue of this universal law, a government cannot gain ability to perform its special work, without losing such ability as it had to perform other work.

This then is, as we say, the pure science of the matter. The original and essential office of a government is that of protecting its subjects against aggression. In low, undeveloped forms of society, where yet there is but little differentiation of parts, and little specialization of functions, this essential work, discharged with extreme imperfection, is joined with endless other work: the government has a controlling action over all conduct, individual and social—regulates dress, food, ablutions, prices, trade, religion—exercises unbounded power. In becoming so constituted as to discharge better its essential function, the government becomes more limited alike in the power and the habit of doing other things. Increasing ability to perform its true duty, involves increasing inability to perform all other kinds of action. And this conclusion, deducible from the universal law of organization, is the conclusion to which inductive reasoning has already led us. We have seen that, whether considered in theory or practice, representative government is the best for securing justice. We have also seen that, whether considered in theory or practice, it is the worst for all other purposes. And here we find that this last characteristic is a necessary accompaniment of the first. These various incapacities, which seem to tell so seriously against the goodness of representative government, are but the inevitable con-

sequences of its more complete adaptation to its proper work; and, so understood, are themselves indications that it is the form of government natural to a more highly-organized and advanced social state.

We do not expect this consideration to weigh much with those whom it most concerns. Truths of so abstract a character find no favour with senates. The metamorphosis we have described is not mentioned in Ovid. History as at present written, makes no comments on it. There is nothing about it to be found in blue-books and committee-reports. Neither is it proved by statistics. Evidently, then, it has but small chance of recognition by the "practical" legislator. But to the select few who study the Social Science, properly so called, we commend this general fact as one of the highest significance. Those who know something of the general laws of life, and who perceive that these general laws of life underlie all social phenomena, will see that this dual change in the character of advanced governments, involves an answer to the first of all political questions. They will see that this specialization in virtue of which an advanced government gains power to perform one function, while it loses power to perform others, clearly indicates the true limitations of State-duty. They will see that, even leaving out all other evidence, this fact alone shows conclusively what is the proper sphere of legislation.

## PARLIAMENTARY REFORM: THE DANGERS, AND THE SAFEGUARDS.

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THIRTY years ago, the dread of impending evils agitated not a few breasts throughout England. Instinctive fear of change, justified as it seemed by outbursts of popular violence, conjured up visions of the anarchy which would follow the passing of a Reform Bill. In scattered farmhouses there was chronic terror, lest those newly endowed with political power should in some way filch all the profits obtained by rearing cattle and growing corn. The occupants of halls and manors spoke of ten-pound householders almost as though they formed an army of spoilers, threatening to overrun and devastate the property of landholders. Among townspeople there were some who interpreted the abolition of old corruptions into the establishment of mob-government; which they held to be equivalent with spoliation. And even in Parliament, such alarms found occasional utterance: as, for instance, through the mouth of Sir Robert Inglis, who hinted that the national debt would not improbably be repudiated if the proposed measure became law.

There may perhaps be a few who regard the now pending change in the representation with similar dread—who think that artisans and others of their grade are prepared, when the power is given to them, to lay hands on property. We presume, however, that such irrational alarmists form but a small percentage of the nation. Not only throughout the Liberal party, but among the Conservatives, there exists a much fairer estimate of the popular character than is implied



by anticipations of so gloomy a kind. Many of the upper and middle classes are conscious of the fact, that if critically compared, the average conduct of the wealthy would not be found to differ very widely in rectitude from that of the poor. Making due allowance for differences in the kinds and degrees of temptation to which they are exposed, the respective grades of society are tolerably uniform in their morals. That disregard of the rights of property which, among the people at large, shows itself in the direct form of petty thefts, shows itself among their richer neighbours in various indirect forms, which are scarcely less flagitious and often much more detrimental to fellow-citizens. Traders, wholesale and retail, commit countless dishonesties, ranging from adulteration and short measure, up to fraudulent bankruptcy—dishonesties of which we sketched out some of the ramifications in a late article on “The Morals of Trade.” The trickeries of the turf; the bribery of electors; the non-payment of tradesmen’s bills; the jobbing in railway-shares; the obtainment of exorbitant prices for land from railway-companies; the corruption that attends the getting of private bills through Parliament—these and other such illustrations, show that the unconscientiousness of the upper class, manifested though it is in different forms, is not less than that of the lower class: bears as great a ratio to the size of the class, and, if traced to its ultimate results, produces evils as great, if not greater.

And if the facts prove that in uprightness of intention, there is little to choose between one class of the community and another, an extension of the franchise cannot rationally be opposed on the ground that property would be directly endangered. There is no more reason to suppose that the mass of artizans and labourers would use political power with conscious injustice to their richer neighbours, than there is reason to suppose that their richer neighbours now consciously commit legal injustices against artizans and labourers.

What, then, is the danger to be apprehended? If land,

and houses, and railways, and funds, and property of all other kinds, would be held with no less security than now, why need there be any fears that the franchise would be misused? What are the misuses of it which are rationally to be anticipated?

The ways in which those to be endowed with political power are likely to abuse it, may be inferred from the ways in which political power has been abused by those who have possessed it.

What general trait has characterized the rule of the classes hitherto dominant? These classes have not habitually sought their own *direct* advantage at the expense of other classes; but their measures have nevertheless frequently been such as were *indirectly* advantageous to themselves. Voluntary self-sacrifice has been the exception. The rule has been, so to legislate as to preserve private interests from injury; whether public interests were injured or not. Though, in equity, a landlord has no greater claim on a defaulting tenant than any other creditor; yet landlords, having formed the majority of the legislature, the law has given them power to recover rent in anticipation of other creditors. Though the duties payable to government on the transfer of property to heirs and legatees, might justly have been made to fall more heavily on the wealthy than on the comparatively poor, and on real property rather than on personal property; yet the reverse arrangement was enacted and long maintained; and is even still partially in force. Rights of presentation to places in the Church, obtained however completely in violation of the spirit of the law, are yet tenaciously defended, with little or no regard to the welfare of those for whom the Church ostensibly exists. Were it not accounted for by the bias of personal interests, it would be impossible to explain the fact, that on the question of protection to agriculture, the landed classes and their dependents were ranged against the other classes: the same evidence being open to both. And if there needs a still stronger illustration, we have it in the

opposition made to the repeal of the Corn-Laws by the established clergy. Though by their office, preachers of justice and mercy—though constantly occupied in condemning selfishness and holding up a supreme example of self-sacrifice ; yet so swayed were they by those temporal interests which they thought endangered, that they offered to this proposed change an almost uniform resistance. Out of some ten thousand *ex officio* friends of the poor and needy, there was but one (the Rev. Thomas Spencer), who took an active part in abolishing this tax imposed on the people's bread for the maintenance of landlords' rents.

Such are a few of the ways in which, in modern times, those who have the power seek their own benefit at the expense of the rest. It is in analogous ways that we must expect any section of the community which may be made predominant by a political change, to sacrifice the welfare of other sections to its own. While we do not see reason to think that the lower classes are intrinsically less conscientious than the upper classes ; we do not see reason to think that they are more conscientious. Holding, as we do, that in each society, and in each age, the morality is, on the average, the same throughout all ranks ; it seems to us clear that if the rich, when they have the opportunity, make laws which unduly favour themselves, it must be concluded that the poor, if their power was in excess, would do the like in similar ways and to a similar extent. Without believing that they would knowingly enact injustice, we believe that they would be unconsciously biased by personal considerations ; and that our legislation would err as much in a new direction as it has hitherto done in the old.

This abstract conclusion we shall find confirmed on contemplating the feelings and opinions current among artizans and labourers. What the working classes now wish done, indicates what they would be likely to do, if a reform in the representation made them preponderate. Judging from their prevailing sentiments, they would doubtless do, or aid in

doing, many things which it is desirable to have done. Such a question as that of Church-rates would have been settled long ago had the franchise been wider. Any great increase of popular influence, would go far to rectify the present inequitable relation of the established religious sect to the rest of the community. And various other remnants of class-legislation would soon be swept away. But besides ideas likely to eventuate in changes which we should regard as beneficial, the working classes entertain ideas that could not be realized without gross injustice to other classes and ultimate injury to themselves. There is among them a prevailing enmity towards capitalists. The fallacy that machinery acts to their damage, is still widely spread; both among rural labourers and the inhabitants of towns. And they show a wish, not only to dictate how long per day men shall work, but to regulate all the relations between employers and employed. Let us briefly consider the evidence of this.

When, adding another to the countless errors which it has taught the people, the Legislature, by passing the Ten-Hours-Bill, asserted that it was the duty of the State to limit the duration of labour; there naturally arose among the working classes, the desire for further ameliorations to be secured in the same way. First came the formidable strike of the Amalgamated Engineers. The rules of this body aim to restrict the supply of labour in various ways. No member is allowed to work more than a fixed number of hours per week; nor for less than a fixed rate of wages. No man is admitted into the trade who has not "earned a right by probationary servitude." There is a strict registration; which is secured by fines on any one who neglects to notify his marriage, removal, or change of service. The council decides, without appeal, on all the affairs, individual and general, of the body. How tyrannical are the regulations may be judged from the fact, that members are punished for divulging anything concerning the society's business; for censuring one another; for vindicating the conduct of those fined, etc. And their

own unity of action being secured by these coercive measures, the Amalgamated Engineers made a prolonged effort to impose on their employers, sundry restrictions which they supposed would be beneficial to themselves. More recently, we have seen similar objects worked for by similar means during the strike of the Operative Builders. In one of their early manifestoes, this body of men contended that they had "an equal right to share with other workers, that large amount of public sympathy which is now being so widely extended in the direction of shortening the hours of labour:" thus showing at once their delusion and its source. Believing, as they had been taught by an Act of Parliament to believe, that the relation between the quantity of labour given and the wages received, is not a natural but an artificial one; they demanded that while the wages remained the same, the hours should be reduced from ten to nine. They recommended their employers so to make their future contracts, as to allow for this diminished day's work: saying they were "so sanguine as to consider the consummation of their desire inevitable:" a polite way of hinting that their employers must succumb to the irresistible power of their organization. Referring to the threat of the master-builders to close their works, they warned them against "the responsibility of causing the public disaster" thus indicated. And when the breach finally took place, the Unionists set in action the approved appliances for bringing masters to terms; and would have succeeded had it not been that their antagonists, believing that concessions would be ruinous, made a united resistance. During several previous years, master-builders had been yielding to various extravagant demands, of which those recently made were a further development. Had they assented to the diminished day's work, and abolished systematic overtime, as they were required to do, there is no reason to suppose the dictation would have ended here. Success would have presently led to still more exacting requirements; and future years would have witnessed further

extensions of this mischievous meddling between capital and labour.

Perhaps the completest illustration of the industrial regulations that find favour with artizans, is supplied by the Printers' Union. With the exception of those engaged in *The Times* office, and in one other large establishment, the proprietors of which successfully resisted the combination, the compositors, pressmen, etc., throughout the kingdom, form a society which controls all the relations between employers and employed. There is a fixed price for setting up the type—so much per thousand letters: no master can give less; no compositor being allowed by the Union to work for less. There are established rates for press-work; and established numbers less than which you cannot have printed, without paying for work that is not done. The scale rises by what are called "tokens" of 250; and if but 50 copies are required, the charge is the same as for printing 250; or if 300 are wanted, payment must be made for 500. Besides regulating prices and modes of charging to their own advantage, in these and other ways, the members of the Union restrict competition by limiting the number of apprentices brought into the business. So well organized is this combination that the masters are obliged to succumb. An infraction of the rules in any printing-office, leads to a strike of the men; and this being supported by the Union at large, the employer has to yield.

That in other trades, artizans would, if they could, establish restrictive systems equally complete with this, we take to be sufficiently proved by their often repeated attempts. The Tin-plate-Workers' strike, the Coventry-Weavers' strikes, the Engineers' strike, the Shoemakers' strike, the Builders' strike, all show a most decided leaning towards a despotic regulation of trade-prices, hours, and arrangements—towards an abolition of free trade between employers and employed. Should the men engaged in our various industries succeed in their aims, each industry would be so shackled as seriously

to raise the cost of production. The chief penalty would thus fall on the working classes themselves. Each producer, while protected in the exercise of his own occupation, would on every commodity he bought have to pay an extra price, consequent on the protection of other producers. In short, there would be established, under a new form, the old mischievous system of mutual taxation. And a final result would be such a diminished ability to compete with other nations as to destroy our foreign trade.

Against results like these it behoves us carefully to guard. It becomes a grave question how far we may safely give political power to those who entertain views so erroneous respecting fundamental social relations; and who so pertinaciously struggle to enforce these erroneous views. Men who render up their private liberties to the despotic rulers of trades-unions, seem scarcely independent enough rightly to exercise political liberties. Those who so ill understand the nature of freedom, as to think that any man or body of men has a right to prevent employer and employed from making any contract they please, would almost appear to be incapacitated for the guardianship of their own freedom and that of their fellow-citizens. When their notions of rectitude are so confused, that they think it a duty to obey the arbitrary commands of their union-authorities, and to abandon the right of individually disposing of their labour on their own terms—when, in conformity with this inverted sense of duty, they even risk the starvation of their families—when they call that an “odious document” which simply demands that master and man shall be free to make their own bargains—when their sense of justice is so obtuse that they are ready to bully, to deprive of work, to starve, and even to kill, members of their own class who rebel against dictation, and assert their rights to sell their labour at such rates and to such persons as they think fit—when in short they prove themselves ready to become alike slaves and tyrants, we may well pause before giving them the franchise.

The objects which artizans have long sought to achieve by their private organizations, they would, had they adequate political power, seek to achieve by public enactments. If, on points like those instanced, their convictions are so strong and their determination so great, that they will time after time submit to extreme privations in the effort to carry them ; it is a reasonable expectation that these convictions, pushed with this determination, would soon be expressed in law, if those who held them had a dominant power. With working men, questions concerning the regulation of labour are of the highest interest. Candidates for Parliament would be more likely to obtain their suffrages by pandering to their prejudices on such questions, than in any other way. Should it be said that no evil need be feared unless the artizan-class numerically preponderated in the constituencies ; it may be rejoined that not unfrequently, where two chief political parties are nearly balanced, some other party, though much smaller, determines the election. When we bear in mind that the trades-unions throughout the kingdom number 600,000 members, and command a fund of £300,000—when we remember that these trades-unions are in the habit of aiding each other, and have even been incorporated into one national association—when we also remember that their organization is very complete, and their power over their members mercilessly exercised ; it seems likely that at a general election their combined action would decide the result in many towns : even though the artizans in each case formed but a moderate portion of the constituency. How influential small but combined bodies are, the Irish Members of our House of Commons prove to us ; and still more clearly the Irish emigrants in America. Certainly these trade-combinations are not less perfectly organized ; nor are the motives of their members less strong. Judge then how efficient their political action would be.

It is true that in county-constituencies and rural towns, the artizan class have no power ; and that in the antagonism



of agriculturists there would be a restraint on their projects. But, on the other hand, the artizans would on these questions, have the sympathy of many not belonging to their own body. Numerous small shopkeepers, and others who are in point of means about on their level, would go with them in their efforts to regulate the relations of capital and labour. Among the middle classes, too, there are not a few kindly-disposed men who are so ignorant of political economy as to think the artizans justified in their aims. Even among the landed class they might find supporters. We have but to recollect the antipathy shown by landowners in Parliament to the manufacturing interest, during the ten-hours' agitation, to see that it is quite possible for country squires to join the working men in imposing restrictions unfavourable to employers. True, the angry feeling which then prompted them has in some measure died away. It is to be hoped, too, that they have gained wisdom. But still, remembering the past, we must take this contingency into account.

Here, then, is one of the dangers to which an extension of the franchise opens the door. While the fear that the rights of property may be directly interfered with, is absurd, it is a very rational fear that the rights of property may be indirectly interfered with—that by cramping laws, the capitalist may be prevented from using his money as he finds best, and the workman from selling his labour to the greatest advantage. We are not prepared to say what widening of the representation would bring about such results. We profess neither to estimate what amount of artisan-power a £6 or a £5 borough-franchise would give; nor to determine whether the opposing powers would suffice to keep it in check. Our purpose here is simply to indicate this establishment of injurious industrial regulations, as one of the dangers to be kept in view.

Turn we now to another danger, distinct from the foregoing, though near akin to it. Next after the evils of that

over-legislation which restricts the exchange of capital and labour, come the evils of that over-legislation which provides for the community, by State-agency, benefits which capital and labour should be left spontaneously to provide. And it naturally though unfortunately happens, that those who lean to the one kind of over-legislation, lean also to the other kind. Men leading laborious lives, relieved by little in the shape of enjoyment, give willing ears to the doctrine that the State should provide them with various positive advantages and gratifications. The much-enduring poor cannot be expected to deal very critically with those who promise them gratis pleasures. As a drowning man catches at a straw, so will one whose existence is burdensome catch at anything, no matter how unsubstantial, which holds out the slightest hope of a little happiness. We must not, therefore, blame the working-classes for being ready converts to socialistic schemes, or to a belief in "the sovereign power of political machinery."

Not that the working-classes alone fall into these delusions. Unfortunately they are countenanced, and have been in part misled, by those above them. In Parliament and out of Parliament, well-meaning men among the upper and middle ranks, have been active apostles of these false doctrines. There has ever been, and still continues to be, very much law-making based on the assumption, that it is the duty of the State, not simply to insure each citizen fair play in the battle of life, but to help him in fighting the battle of life : having previously taken money from his or some one else's pocket to pay the cost of doing this. And we cannot glance over the papers without seeing how active are the agitations carried on out of doors in furtherance of this policy ; and how they threaten to become daily more active. The doings of the Chadwick-school furnish one set of illustrations. From those of the Shaftesbury-school other illustrations may be gathered. And in the transactions of the body, absurdly self-entitled "The National Association for the Promotion of

Social Science," we find still more numerous developments of this mischievous error.

When we say that the working-classes, and more especially the artizan-classes, have strong leanings towards these Utopianisms, which they have unhappily been encouraged to entertain by many who should have known better; we do not speak at random. We are not drawing an *à priori* inference as to the doctrines likely to find favour with men in their position. Nor are we guided merely by evidence to be gathered from newspapers. But we have a basis of definite fact in the proceedings of reformed municipal governments. These bodies have from year to year extended their functions; and so heavy has in some cases become the consequent local taxation, as to have caused a reaction against the political party that was responsible. Town-councils almost exclusively Whig, have of late been made comparatively Conservative, by the efforts of those richer classes who suffer most from municipal extravagance. With whom, then, has this extravagance been popular? With the poorer members of the constituencies. Candidates for town-councillorships have found no better means of insuring the suffrages of the mass, than the advocacy of this or the other local undertaking. To build baths and wash-houses at the expense of the town, has proved a popular proposal. The support of public gardens, out of funds raised by local rates, has been applauded by the majority. So, too, with the establishment of free libraries, which has, of course, met with encouragement from working-men, and from those who wish to find favour with them. Should some one, taking a hint from the cheap concerts now common in our manufacturing towns, propose to supply music at the public cost, we doubt not he would be hailed as a friend of the people. And similarly with countless socialistic schemes; of which, when once commenced, there is no end.

Such being the demonstrated tendencies of municipal governments, with their extended bases of representation, is it not a fair inference that a Central Government, having a base

of representation much wider than the present, would manifest like tendencies? We shall see the more reason for fearing this, when we remember that those who approve of multiplied State-agencies, would generally ally themselves with those who seek for the legislative regulation of labour. The doctrines are near akin; and they are, to a considerable extent, held by the same persons. If united the two bodies would have a formidable power; and, appealed to as they would often be, by candidates expressing sympathy on both these points, they might, even though a minority, get unduly represented in the legislature. Such, at least, seems to us a further danger. Led by philanthropists having sympathies stronger than their intellects, the working-classes are very likely to employ their influence in increasing over-legislation: not only by agitating for industrial regulations, but in various other ways. What extension of franchise would make this danger a serious one, we do not pretend to say. Here, as before, we would simply indicate a probable source of mischief.

And now what are the safeguards? Not such as we believe will be adopted. To meet evils like those which threaten to follow the impending political change, the common plan is to devise special checks—minor limitations and qualifications. Not to dry up the evil at its source, but to dam it out, is, in analogous cases, the usual aim. We have no faith in such methods. The only efficient safeguard lies in a change of convictions and motives. And to work a change of this kind, there is no certain way but that of letting men directly feel the penalties which mistaken legislation brings on them. “How is this to be done?” the reader will doubtless ask. Simply by letting causes and effects stand in their natural relations. Simply by taking away those vicious arrangements which now mostly prevent men from seeing the reactions that follow legislative actions.

At present, the extension of public administrations is

popular, mainly because there has not been established in the minds of the people, any distinct connexion between the benefits to be gained and the expenses to be paid. Of the conveniences or gratifications secured to them by some new body of officials with a fund at its disposal, they have immediate experience ; but of the way in which the costs fall on the nation, and ultimately on themselves, they have no immediate experience. Our fiscal arrangements dissociate the ideas of increased public expenditure and increased burdens on all who labour ; and thus encourage the superstition that law can give gratis benefits. This is clearly the chief cause of that municipal extravagance to which we have above adverted. The working men of our towns possess public power, while many of them do not directly bear public burdens. On small houses the taxes for borough-purposes are usually paid by the landlords ; and of late years, for the sake of convenience and economy, there has grown up a system of compounding with landlords of small houses even for the poor's-rates chargeable to their tenants. Under this arrangement, at first voluntary but now compulsory, a certain discount off the total rates due from a number of houses, is allowed to the owner, in consideration of his paying the rates, and thus saving the authorities trouble and loss in collection. And he is supposed to raise his rents by the full amount of the rates charged. Thus, most municipal electors, not paying local taxes in a separate form, are not constantly reminded of the connexion between public expenditure and personal costs ; and hence it happens that any outlay made for local purposes, no matter how extravagant and unreasonable, which brings to them some kind of advantage, is regarded as pure gain. If the corporation resolves, quite unnecessarily, to rebuild a town-hall, the resolution is of course approved by the majority. "It is good for trade, and it costs us nothing," is the argument which passes vaguely through their minds. If some one proposes to buy an adjoining estate, and turn it into a public park, the working classes naturally give their support

to the proposal ; for ornamental grounds cannot but be an advantage, and though the rates may be increased, that will be no affair of theirs. Thus necessarily arises a tendency to multiply public agencies and increase public outlay. It becomes an established policy with popularity-hunters, to advocate new works to be executed by the town. Those who disapprove this course are in fear that their seats may be jeopardized at the next election, should they make a vigorous opposition. And thus do these local administrations inevitably lean towards abnormal developments.

No one can, we think, doubt, that were the rates levied directly on all electors, a check would be given to this municipal communism. If each small occupier found that every new work undertaken by the authorities, cost him so many pence extra in the pound, he would begin to consider with himself, whether the advantage gained was equivalent to the price paid ; and would often reach a negative conclusion. It would become a question with him whether, instead of letting the local government provide him with certain remote advantages in return for certain moneys, he might not himself purchase with such moneys immediate advantages of greater worth ; and, generally, he would decide that he could do this. Without saying to what extent such a restraint would act, we may safely say that it would be beneficial. Every one must admit, that each inhabitant of a town ought constantly to be reminded of the relation between the work performed for him by the corporation and the sum he pays for it. No one can, we think, deny that the habitual experience of this relation would tend to keep the action of local governments within proper bounds.

Similarly with the Central Government. Here the effects wrought by public agencies, are still more dissociated from the costs they entail on each citizen. The bulk of the taxes being raised in so unobtrusive a way, and affecting the masses in modes so difficult to trace, it is scarcely possible for the masses to realize the fact, that the sums paid by Government

for supporting schools, for facilitating emigration, for inspecting mines, factories, railways, ships, etc., have been in great part taken from their own pockets. The more intelligent of them understand this as an abstract truth ; but it is not a truth present to their minds in such a definite shape as to influence their actions. Quite otherwise, however, would it be if taxation were direct ; and the expense of every new State-agency were felt by each citizen as an additional demand made on him by the tax-gatherer. Then would there be a clear, constantly-recurring experience of the truth, that for everything which the State gives with one hand it takes away something with the other ; and then would it be less easy to propagate absurd delusions about the powers and duties of Governments. No one can question this conclusion who calls to mind the reason currently given for maintaining indirect taxation ; namely, that the required revenue could not otherwise be raised. Statesmen see that if instead of taking from the citizen here a little and there a little, in ways that he does not know or constantly forgets, the whole amount were demanded in a lump sum, it would scarcely be possible to get it paid. Grumbling and resistance would rise probably to disaffection. Coercion would in hosts of cases be needed to obtain this large total tax ; which indeed, even with this aid, could not be obtained from the majority of the people, whose improvident habits prevent the accumulation of considerable sums. And so the revenue would fall immensely short of that expenditure which is supposed necessary. This being assented to, it must perforce be admitted that under a system of direct taxation, further extension of public administrations, entailing further costs, would meet with general opposition. Instead of multiplying the functions of the State, the tendency would obviously be to reduce their number.

Here, then, is one of the safeguards. The incidence of taxation must be made more direct in proportion as the franchise is extended. Our changes ought not to be in the direction of the Compound-Householders-Act of 1851, which

makes it no longer needful for a Parliamentary elector to have paid poor's-rates before giving a vote ; but they ought to be in exactly the opposite direction. The exercise of power over the national revenue, should be indissolubly associated with the *conscious* payment of contributions to that revenue. Direct taxation instead of being limited, as many wish, must be extended to lower and wider classes, as fast as these classes are endowed with political power.

Probably this proposal will be regarded with small favour by statesmen. It is not in the nature of things for men to approve a system which tends to restrict their powers. We know, too, that any great extension of direct taxation will be held at present impossible ; and we are not prepared to assert the contrary. This, however, is no reason against reducing the indirect taxation and augmenting the direct taxation as far as circumstances allow. And if when the last had been increased and the first decreased to the greatest extent now practicable, it were made an established principle that any additional revenue must be raised by direct taxes, there would be an efficient check to one of the evils likely to follow from further political enfranchisement.

The other evil which we have pointed out as rationally to be feared, cannot be thus met, however. Though an ever-recurring experience of the relation between State-action and its cost, would hinder the growth of those State-agencies which undertake to supply citizens with positive conveniences and gratifications ; it would be no restraint on that negative and inexpensive over-legislation which trespasses on individual freedom—it would not prevent mischievous meddling with the relations between labour and capital. Against this danger the only safeguards appear to be, the spread of sounder views among the working classes, and the moral advance which such sounder views imply.

“That is to say, the people must be educated,” responds the reader. Yes, education is the thing wanted ; but not the



education for which most men agitate. Ordinary school-training is not a preparation for the right exercise of political power. Conclusive proof of this is given by the fact that the artizans, from whose mistaken ideas the most danger is to be feared, are the best informed of the working classes. Far from promising to be a safeguard, the spread of such education as is commonly given, appears more likely to increase the danger. Raising the working classes in general to the artizan-level of culture, rather threatens to augment their power of working political evil. The current faith in Reading, Writing, and Arithmetic, as fitting men for citizenship, seems to us quite unwarranted : as are, indeed, most other anticipations of the benefits to be derived from learning lessons. There is no connexion between the ability to parse a sentence, and a clear understanding of the causes that determine the rate of wages. The multiplication-table affords no aid in seeing through the fallacy that the destruction of property is good for trade. Long practice may have produced extremely good penmanship without having given the least power to understand the paradox, that machinery eventually increases the number of persons employed in the trades into which it is introduced. Nor is it proved that smatterings of mensuration, astronomy, or geography, fit men for estimating the characters and motives of Parliamentary candidates. Indeed we have only thus to bring together the antecedents and the anticipated consequents, to see how untenable is the belief in a relation between them. When we wish a girl to become a good musician, we seat her before the piano : we do not put drawing implements into her hands, and expect music to come along with skill in the use of pencils and colour-brushes. Sending a boy to pore over law-books, would be thought an extremely irrational way of preparing him for civil engineering. And if in these and all other cases, we do not expect fitness for any function except through instruction and exercise in that function ; why do we expect fitness for citizenship to be produced by a discipline

which has no relation to the duties of the citizen? Probably it will be replied that by making the working man a good reader, we give him access to sources of information from which he may learn how to use his electoral power; and that other studies sharpen his faculties and make him a better judge of political questions. This is true; and the eventual tendency is unquestionably good. But what if for a long time to come he reads only to obtain confirmation of his errors? What if there exists a literature appealing to his prejudices, and supplying him with fallacious arguments for the mistaken beliefs which he naturally takes up? What if he rejects all teaching that aims to disabuse him of cherished delusions? Must we not say that the culture which thus merely helps the workman to establish himself in error, rather unfits than fits him for citizenship? And do not the trades'-unions furnish us with evidence of this?

How little that which people commonly call education prepares them for the use of political power, may be judged from the incompetency of those who have received the highest education the country affords. Glance back at the blunders of our legislation, and then remember that the men who committed them had mostly taken University-degrees; and you must admit that the profoundest ignorance of Social Science may accompany intimate acquaintance with all that our cultivated classes regard as valuable knowledge. Do but take a young member of Parliament, fresh from Oxford or Cambridge, and ask him what he thinks Law should do, and why? or what it should not do, and why? and it will become manifest that neither his familiarity with Aristotle nor his readings in Thucydides, have prepared him to answer the very first question a legislator ought to solve. A single illustration will suffice to show how different an education from that usually given, is required by legislators, and consequently by those who elect them: we mean the illustration which the Free-trade agitation supplies. By kings, peers, and members of Parliament, mostly brought up at universities,

trade had been hampered by protections, prohibitions, and bounties. For centuries had been maintained these legislative appliances which a very moderate insight shows to be detrimental. Yet, of all the highly-educated throughout the nation during these centuries, scarcely a man saw how mischievous such appliances were. Not from one who devoted himself to the most approved studies, came the work which set politicians right on these points ; but from one who left college without a degree, and prosecuted inquiries which the established education ignored. Adam Smith examined for himself the industrial phenomena of societies ; contemplated the productive and distributive activities going on around him ; traced out their complicated mutual dependences ; and thus reached general principles for political guidance. In recent days, those who have most clearly understood the truths he enunciated, and by persevering exposition have converted the nation to their views, have not been graduates of universities. While, contrariwise, those who have passed through the prescribed *curriculum*, have commonly been the most bitter and obstinate opponents of the changes dictated by politico-economical science. In this all-important direction, right legislation was urged by men deficient in the so-called best education ; and was resisted by the great majority of men who had received this so-called best education !

The truth for which we contend, and which is so strangely overlooked, is, indeed, almost a truism. Does not our whole theory of training imply that the right preparation for political power is political cultivation ? Must not that teaching which can alone guide the citizen in the fulfilment of his public actions, be a teaching that acquaints him with the effects of public actions ?

The second chief safeguard to which we must trust is, then, the spread, not of that mere technical and miscellaneous knowledge which men are so eagerly propagating, but of political knowledge ; or, to speak more accurately—knowledge of Social Science. Above all, the essential thing is, the

establishment of a true theory of government—a true conception of what legislation is for, and what are its proper limits. This question which our political discussions habitually ignore, is a question of greater moment than any other. Inquiries which statesmen deride as speculative and unpractical, will one day be found infinitely more practical than those which they wade through Blue Books to master, and nightly spend many hours in debating. The considerations that every morning fill a dozen columns of *The Times*, are mere frivolities when compared with the fundamental consideration—What is the proper sphere of government? Before discussing the way in which law should regulate some particular thing, would it not be wise to put the previous question—Whether law ought or ought not to meddle with that thing? and before answering this, to put the more general question—What law should do, and what it should leave undone? Surely, if there are any limits at all to legislation, the settlement of these limits must have effects far more profound than any particular Act of Parliament can have; and must be by so much the more momentous. Surely, if there is danger that the people may misuse political power, it is of supreme importance that they should be taught for what purpose political power ought alone to be used.

Did the upper classes understand their position, they would, we think, see that the diffusion of sound views on this matter more nearly concerns their own welfare and that of the nation at large, than any other thing whatever. Popular influence will inevitably go on increasing. Should the masses gain a predominant power while their ideas of social arrangements and legislative action remain as crude as at present, there will certainly result disastrous meddlings with the relations of capital and labour, as well as a disastrous extension of State-administrations. Immense damage will be inflicted: primarily on employers; secondarily on the employed; and eventually on the nation as a whole. These evils can be prevented, only by establishing in the public mind, a pro-

found conviction that there are certain comparatively narrow limits to the functions of the State ; and that these limits ought on no account to be transgressed. Having first learned what these limits are, the upper classes ought energetically to use all means of teaching them to the people.

In No. XXIV. of this journal, for October, 1857, we endeavoured to show, that while representative government is, by its intrinsic nature, better than any other for administering justice or insuring equitable relations of citizens to each other, it is, by its intrinsic nature, worse than any other for all the various additional functions which governments commonly undertake. To the question—What is representative government good for ? our reply was—“It is good, especially good, good above all others, for doing the thing which a government should do. It is bad, especially bad, bad above all others, for doing the things which a government should not do.”

To this truth we may here add a correlative one. As fast as a government, by becoming representative, grows better fitted for maintaining the rights of citizens, it grows not only unfitted for other purposes, but dangerous for other purposes. In gaining adaptation for the essential function of a government, it loses such adaptation as it had for other functions ; not only because its complexity is a hindrance to administrative action, but also because in discharging other functions it must be mischievously influenced by class bias. So long as it is confined to the duty of preventing the aggressions of individuals on each other, and protecting the nation at large against external enemies, the wider its basis the better ; for all men are similarly interested in the security of life, property, and freedom to exercise the faculties. But let it undertake to bring home positive benefits to citizens, or to interfere with any of the special relations between class and class, and there necessarily enters an incentive to injustice. For in no such cases can the immediate interests of all classes be alike. Therefore do we say that as fast as

representation is extended, the sphere of government must be contracted.

POSTSCRIPT.—Since the foregoing pages were written, Lord John Russell has introduced his Reform Bill ; and in application of the general principles we contend for, a few words may fitly be added respecting it.

Of the extended county-franchise most will approve, save those whose illegitimate influence is diminished by it. Adding to the rural constituencies a class less directly dependent on large landowners, can scarcely fail to be beneficial. Even should it not at first perceptibly affect the choice of representatives, it will still be a good stimulus to political education and to consequent future benefits. Of the re-distribution of seats, little is to be said, further than that, however far short it may fall of an equitable arrangement, it is perhaps as much as can at present be obtained.

Whether the right limit for the borough-franchise has been chosen, is, on the other hand, a question that admits of much discussion. Some hesitation will probably be felt by all who duly weigh the evidence on both sides. Believing, as we do, that the guidance of abstract equity, however much it may need qualification, must never be ignored, we should be glad were it at once practicable more nearly to follow it ; since it is certain that only as fast as the injustice of political exclusion is brought to an end, will the many political injustices which grow out of it, disappear. Nevertheless, we are convinced that the forms which freedom requires, will not of themselves produce the reality of freedom, in the absence of an appropriate national character ; any more than the most perfect mechanism will do its work in the absence of a motive power. There seems good reason to think that the degree of liberty a people is capable of in any given age, is a fixed quantity ; and that any artificial extension of it in one direction, simply brings about an equivalent limitation in some other direction. French republics show scarcely any more respect for indi-

vidual rights than the despotisms they supplant ; and French electors use their freedom to put themselves again in slavery. In America, the feeble restraints imposed by the State are supplemented by the strong restraints of a public opinion which, in many respects, holds the citizens in greater bondage than here. And if there needs a demonstration that representative equality is an insufficient safeguard for freedom, we have it in the trades'-unions already referred to ; which, purely democratic as is their organization, yet exercise over their members a tyranny that is almost Neapolitan in its rigour and unscrupulousness. The greatest attainable amount of individual liberty of action, being the true end ; and the diffusion of political power being regarded mainly as a means to this end ; the real question when considering further extensions of the franchise, is—whether the average liberty of action of citizens will be increased?—whether men will be severally freer than before to pursue the objects of life in their own way ? Or, in the present case, the question is—whether the good which £ 7, £ 6, or £ 5 householders would undoubtedly do in helping to abolish existing injustices, will be partly or wholly neutralized by the evil they might do in establishing other injustices ? The desideratum is, as large an increase in the number of electors as can be made without enabling the people to carry out their delusive schemes of over-legislation. Whether the increase proposed is greater or less than this, is the essential point. Let us briefly consider the evidence on each side.

As shown by Lord J. Russell's figures, the new borough-electors will consist mainly of artizans ; and these, as we have seen, are in great part banded together by a common wish to regulate the relations of capital and labour. As a class, they are not as Lord J. Russell describes them, "fitted to exercise the franchise freely and independently." On the contrary, there are no men in the community so shackled. They are the slaves of the authorities they have themselves set up. The dependence of farmers on landlords, or of operatives on

employers, is much less servile ; for they can carry their capital or labour elsewhere. But the penalty for disobedience to trades-union dictates, pursues the rebel throughout the kingdom. Hence the great mass of the new borough-electors must be expected to act simultaneously, on the word of command being issued from a central council of united trades. Even while we write, we meet with fresh reason for anticipating this result. An address from the Conference of the Building Trades to the working classes throughout the kingdom, has just been published, thanking them for their support ; advising the maintenance of the organization ; anticipating future success in their aims ; and intimating the propriety of recommencing the nine-hours' agitation. We must, then, be prepared to see these industrial questions made leading questions ; for artizans have a much keener interest in them than in any others. And we may feel certain that many elections will turn upon them.

How many ? There are some thirty boroughs in which the newly-enfranchised will form an actual majority—will, if they act together, be able to outvote the existing electors ; even supposing the parties into which they are now divided were to unite. In half-a-dozen other boroughs, the newly-enfranchised will form a virtual majority—will preponderate unless the present liberal and conservative voters co-operate with great unanimity, which they will be unlikely to do. And the number proposed to be added to the constituency, is one-half or more in nearly fifty other boroughs : that is, in nearly fifty other boroughs, the new party will be able to arbitrate between the two existing parties ; and will give its support to whichever of these promises most aid to artizan-schemes. It may be said that in this estimate we assume the whole of the new borough-electors to belong to the artizan-class, which they do not. This is true. But on the other hand it must be remembered, that among the £10 householders there is a very considerable sprinkling of this class, while the freemen chiefly consist of it ; and hence the whole



artizan body in each constituency will probably be not smaller than we have assumed. If so, it follows that should the trades-union organization be brought to bear on borough-elections, as it is pretty certain to be, it may prevail in some eighty or ninety places, and command from 100 to 150 seats—supposing, that is, that it can obtain as many eligible candidates.

Meanwhile, the county-constituencies in their proposed state, as much as in their existing state, not being under trades-union influence, may be expected to stand in antagonism to the artizan-constituencies; as may also the small boroughs. It is just possible, indeed, that irritated by the ever-growing power of a rich mercantile class, continually treading closer on their heels, the landowners, carrying with them their dependents, might join the employed in their dictation to employers; just as, in past times, the nobles joined the commonalty against the kings, or the kings joined the commonalty against the nobles. But leaving out this remote contingency, we may fairly expect the rural constituencies to oppose the large urban ones on these industrial questions. Thus, then, the point to be decided is, whether the benefits that will result from this extended suffrage—benefits which we doubt not will be great—may not be secured, while the accompanying evil tendencies are kept in check. It may be that these new artizan-electors will be powerful for good, while their power to work evil will be in a great degree neutralized. But this we should like to see well discussed.

On one question, however, we feel no hesitation; namely, the question of a ratepaying-qualification. From Lord John Russell's answer to Mr. Bright, and more recently from his answer to Mr. Steel, we gather that on this point there is to be no alteration—that £6 householders will stand on the same footing that £10 householders do at present. Now by the Compound-Householders-Act of 1851, to which we have already referred, it is provided that tenants of £10 houses

whose rates are paid by their landlords, shall, after having *once* tendered payment of rates to the authorities, be thereafter considered as ratepayers, and have votes accordingly. That is to say, the ratepaying-qualification is made nominal ; and that in practice it has become so, is proved by the fact that under this Act, 4000 electors were suddenly added to the constituency of Manchester.

The continuance and extension of this arrangement, we conceive to be wholly vicious. Already we have shown that the incidence of taxation ought to be made more direct as fast as popular power is increased ; and that, as diminishing the elector's personal experience of the costs of public administration, this abolition of a ratepaying-qualification is a retrograde step. But this is by no means the sole ground for disapproval. The ratepaying-qualification is a valuable test—a test which tends to separate the more worthy of the working classes from the less worthy. Nay more, it tends to select for enfranchisement, those who have the moral and intellectual qualities especially required for judicious political conduct. For what general mental characteristic does judicious political conduct presuppose ? The power of realizing remote consequences. People who are misled by demagogues, are those who are impressed with the proximate results set forth to them, but are not impressed by the distant results, even when these are explained—regard them as vague, shadowy, theoretical, and are not to be deterred by them from clutching at a promised boon. Conversely, the wise citizen is the one who conceives the distant evils so clearly, that they are practically present to him, and thus outweigh the immediate temptation. Now these are just the respective characteristics of the two classes of tenants whom a ratepaying-qualification separates :—the one having their rates paid by their landlords, and so losing their votes ; the other paying their own rates, that they may get votes :—the one unable to resist present temptations, unable to save money, and therefore so inconvenienced by the payment of rates as

to be disfranchised rather than pay them ; the other resisting present temptations and saving money, with the view, among other ends, of paying rates and becoming electors. Trace their respective traits to their sources, and it becomes manifest, that, on the average, the pecuniarily improvident must be also the politically improvident ; and that the politically provident must be far more numerous among those who are pecuniarily provident. Hence, it is a folly to throw aside a regulation under which these spontaneously separate themselves—severally disfranchise themselves and enfranchise themselves.

## PRISON-ETHICS.

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THE two antagonist theories of morals, like many other antagonist theories, are both right and both wrong. The *à priori* school has its truth; the *à posteriori* school has its truth; and for the proper guidance of conduct, there must be due recognition of both. On the one hand, it is asserted that there is an absolute standard of rectitude; and, respecting certain classes of actions, it is rightly so asserted. From the fundamental laws of life and the conditions of social existence, are deducible certain imperative limitations to individual action—limitations which are essential to a perfect life, individual and social; or, in other words, essential to the greatest possible happiness. And these limitations, following inevitably as they do from undeniable first principles, deep as the nature of life itself, constitute what we may distinguish as absolute morality. On the other hand, it is contended, and in a sense rightly contended, that with men as they are, and society as it is, the dictates of absolute morality are impracticable. Legal control, which involves the infliction of pain, alike on those who are restrained and on those who pay the cost of restraining them, is proved by this fact to be not absolutely moral; seeing that absolute morality is the regulation of conduct in such way that pain shall not be inflicted. Wherefore, if it be admitted that legal control is at present indispensable, it must be admitted that these *à priori* rules cannot be immediately carried out. And hence it follows that we must adapt our laws and actions to the existing character of mankind—that we must estimate the good or

evil resulting from this or that arrangement, and so reach, *à posteriori*, a code fitted for the time being. In short, we must fall back on expediency. Now, each of these positions being valid, it is a grave mistake to adopt either to the exclusion of the other. They should be respectively appealed to for mutual qualification. Progressing civilization, which is of necessity a succession of compromises between old and new, requires a perpetual readjustment of the compromise between the ideal and the practicable in social arrangements: to which end both elements of the compromise must be kept in view. If it is true that pure rectitude prescribes a system of things far too good for men as they are; it is not less true that mere expediency does not of itself tend to establish a system of things any better than that which exists. While absolute morality owes to expediency the checks which prevent it from rushing into utopian absurdities; expediency is indebted to absolute morality for all stimulus to improvement. Granted that we are chiefly interested in ascertaining what is *relatively right*; it still follows that we must first consider what is *absolutely right*; since the one conception presupposes the other. That is to say, though we must ever aim to do what is best for the present times, yet we must ever bear in mind what is abstractedly best; so that the changes we make may be *towards* it, and not *away* from it. Unattainable as pure rectitude is, and may long continue to be, we must keep an eye on the compass which tells us whereabouts it lies; or we shall otherwise be liable to wander in some quite opposite direction.

Illustrations from our recent history will show very conclusively, we think, how important it is that considerations of abstract expediency should be joined with those of concrete expediency—how immense would be the evils avoided and the benefits gained, if *à posteriori* morality were enlightened by *à priori* morality. Take first the case of free trade. Until recently it has been the practice of all nations in all times, artificially to restrict their commerce with other nations.

Throughout past centuries this course may have been defensible as conducing to safety. Without saying that law-givers had the motive of promoting industrial independence, it may yet be said that in ages when national quarrels were perpetual, it would not have been well for any people to be much dependent on others for necessary commodities. But though there is this ground for asserting that commercial restrictions were once expedient, it cannot be asserted that our corn-laws were thus justified: it cannot be alleged that the penalties and prohibitions which, until lately, hampered our trade, were needful to prevent us from being industrially disabled by a war. Protection in all its forms was established and maintained for other reasons of expediency; and the reasons for which it was opposed and finally abolished were also those of expediency. Calculations of immediate and remote consequences were set forth by the antagonist parties; and the mode of decision was by a balancing of these various anticipated consequences. And what, after generations of mischievous legislation and long years of arduous struggle, was the conclusion arrived at, and since justified by the results? Exactly the one which abstract equity plainly teaches. The moral course proves to be the politic course. That ability to exercise the faculties, the total denial of which causes death—that liberty to pursue the objects of desire, without which there cannot be complete life—that freedom of action which his nature prompts every individual to claim, and on which equity puts no limit save the like freedom of action of other individuals, involves, among other corollaries, freedom of exchange. Government which, in protecting citizens from murder, robbery, assault or other aggression, shows us that it has the all-essential function of securing to each this free exercise of faculties within the assigned limits, is called on, in the due discharge of its function, to maintain this freedom of exchange; and cannot abrogate it without reversing its function, and becoming aggressor instead of protector. Thus, absolute morality would all along have shown

in what direction legislation should tend. Qualified only by the consideration that in turbulent times they must not be so carried out as to endanger national life, through suspensions in the supply of necessaries, these *à priori* principles would have guided statesmen, as fast as circumstances allowed, towards the normal condition. We should have been saved from thousands of needless restrictions. Such restrictions as were needful would have been abolished as soon as was safe. An enormous amount of suffering would have been prevented. That prosperity which we now enjoy would have commenced much sooner. And our present condition would have been one of far greater power, wealth, happiness, and morality.

Our railway-politics furnish another instance. A vast loss of national capital has been incurred, and great misery has been inflicted, in consequence of the neglect of a simple principle clearly dictated by abstract justice. Whoso enters into a contract, though he is bound to do that which the contract specifies, is not bound to do some other thing which is neither specified nor implied in the contract. We do not appeal to moral perception only in warranty of this position. It is one deducible from that first principle of equity which, as above pointed out, follows from the laws of life, individual and social; and it is one which the accumulated experience of mankind has so uniformly justified, that it has become a tacitly-recognized doctrine of civil law among all nations. In cases of dispute respecting agreements, the question brought to trial always is, whether the terms of the agreement bind one or other of the contracting parties to do this or that; and it is assumed as a matter of course, that neither of them can be called upon to do more than is expressed or understood in the agreement. Now, this almost self-evident principle has been wholly ignored in railway-legislation. A shareholder, uniting with others to make and work a line from one specified place to another specified place, binds himself to pay certain sums in furtherance of the project; and, by implication, agrees to yield to the majority of his fellow-shareholders

on all questions raised respecting the execution of this project. But he commits himself no further than this. He is not required to obey the majority concerning things not named in the deed of incorporation. Though with respect to the specified railway he has bound himself, he has not bound himself with respect to any *unspecified* railway which his co-proprietors may wish to make; and he cannot be committed to such unspecified railway by a vote of the majority. But this distinction has been wholly passed over. Shareholders in joint-stock undertakings, have been perpetually involved in various other undertakings subsequently decided on by their fellow-shareholders; and against their will have had their properties heavily mortgaged for the execution of projects that were ruinously unremunerative. In every case the proprietary contract for making a particular railway, has been dealt with as though it were a proprietary contract for making railways! Not only have directors thus misinterpreted it, and not only have shareholders foolishly allowed it to be thus misinterpreted; but legislators have so little understood their duties, as to have constantly endorsed the misinterpretation. To this simple cause has been owing most of our railway-companies' disasters. Abnormal facilities for getting capital have caused reckless competition in extension-making and branch-making, and the projection of needless opposition lines, got up to be purchased by the companies they threatened. Had each new scheme been executed by an independent body of shareholders, without any guarantee from another company—without any capital raised by preference-shares, there would have been little or none of the ruinous expenditure we have seen. Something like a hundred millions of money would have been saved, and thousands of families preserved from misery, had the proprietary-contract been enforced according to the dictates of pure equity.

We think these cases go far to justify our position. The general reasons we gave for thinking that the ethics of immediate experience must be enlightened by abstract ethics, to



ensure correct guidance, are strongly enforced by these instances of the gigantic errors that are made when abstract ethics are ignored. The complex estimates of relative expediency, cannot do without the clue furnished by the simple deductions of absolute expediency.

We propose to study the treatment of criminals from this point of view. And first, let us set down those temporary requirements which have hitherto prevented, and do still, in part, prevent the establishment of a perfectly just system.

The same average popular character which necessitates a rigorous form of government, necessitates also a rigorous criminal code. Institutions are ultimately determined by the natures of the citizens living under them; and when these citizens are too impulsive or selfish for free institutions, and unscrupulous enough to supply the requisite staff of agents for maintaining tyrannical institutions, they are proved by implication to be citizens who will both tolerate, and will probably need, severe forms of punishment. The same mental defect underlies both results. The character which originates and sustains political liberty, is a character swayed by remote considerations—a character not at the mercy of immediate temptations, but one which contemplates the consequences likely to arise in future. We have only to remember that, among ourselves, a political encroachment is resisted, not because of any direct evil it inflicts, but because of the evils likely hereafter to flow from it, to see how the maintenance of freedom presupposes the habit of weighing distant results, and being chiefly guided by them. Conversely, it is manifest that men who dwell only in the present, the special, the concrete—who do not realize with clearness the contingencies of the future—will put little value on those rights of citizenship which profit them nothing, save as a means of warding off unspecified evils that can possibly affect them only at a distant time in an obscure way. Well, is it not obvious that the forms of mind thus contrasted, will

require different kinds of punishment for misconduct? To restrain the second, there must be penalties that are severe, prompt, and specific enough to be vividly conceived; while the first may be deterred by penalties that are less definite, less intense, less immediate. For the more civilized, dread of a long, monotonous, criminal discipline may suffice; but for the less civilized there must be inflictions of bodily pain and death. Thus we hold, not only that a social condition which generates a harsh form of government, also of necessity generates harsh retributions; but also, that in such a social condition, harsh retributions are requisite. And there are facts which illustrate this. Witness the case of one of the Italian states, in which the punishment of death having been abolished in conformity with the wish of a dying duchess, assassinations increased so greatly that it became needful to re-establish it.

Besides the fact that in the less-advanced stages of civilization, a bloody penal code is both a natural product of the time, and a needful restraint for the time; there must be noted the fact that a more equitable and humane code could not be carried out from want of fit administration. To deal with delinquents, not by short and sharp methods, but by such methods as abstract justice indicates, implies a class of agencies too complicated to exist under a low social state, and a class of officers more trustworthy than can be found among the citizens in such a state. Especially would the equitable treatment of criminals be impracticable where the amount of crime was very great. The number to be dealt with would be unmanageable. Some simpler method of purging the community of its worst members becomes, under such circumstances, a necessity.

The inapplicability of an absolutely just system of penal discipline to a barbarous or semi-barbarous people, is thus, we think, as manifest as is the inapplicability of an absolutely just form of government to them. And in the same manner that, for some nations, a despotism is warranted; so may a

criminal code of the extremest severity be warranted. In either case the defence is, that the institution is as good as the average character of the people permits—that less stringent institutions would entail social confusion and its far more severe evils. Bad as a despotism is, yet where anarchy is the only alternative, we must say that, as anarchy would bring greater suffering than despotism brings, despotism is justified by the circumstances. And similarly, however inequitable in the abstract were the beheadings, hangings, and burnings of ruder ages, yet, if it be shown that, without penalties thus extreme, the safety of society could not have been insured—if, in their absence, the increase of crime would have inflicted a larger total of evil, and that, too, on peaceable members of the community; then it follows that morality warranted this severity. In the one case, as in the other, we must say that, measured by the quantities of pain respectively inflicted and avoided, the course pursued was the *least wrong*; and to say that it was the least wrong is to say that it was *relatively right*.

But while we thus admit all that can be alleged by the defenders of Draconian codes, we go on to assert a correlative truth which they overlook. While fully recognizing the evils that must follow the premature establishment of a penal system dictated by pure equity, let us not overlook the evils that have arisen from altogether rejecting the guidance of pure equity. Let us note how terribly the one-sided regard for immediate expediency has retarded the ameliorations from time to time demanded.

Consider, for instance, the immense amount of suffering and demoralization needlessly caused by our severe laws in the last century. Those many merciless penalties which Romilly and others succeeded in abolishing, were as little justified by social necessities as by abstract morality. Experience has since proved that to hang men for theft, was not requisite for the security of property. And that such a measure was opposed to pure equity, scarcely needs saying.

Evidently, had considerations of relative expediency been all along qualified by considerations of absolute expediency, these severities, with their many concomitant evils, would have ceased long before they did.

Again, the dreadful misery, demoralization, and crime, generated by the harsh treatment of transported convicts, would have been impossible, had our authorities considered what seemed just as well as what seemed politic. There would never have been inflicted on transports the shocking cruelties proved before the Parliamentary Committee of 1848. We should not have had men condemned to the horrors of the chain-gang even for insolent looks. There could not have been perpetrated such an atrocity as that of locking up chain-gangs "from sunset to sunrise in the caravans or boxes used for this description of prisons, which hold from twenty to twenty-eight men, but in which the whole number *can neither stand upright nor sit down at the same time, except with their legs at right angles to their bodies.*" Men would never have been doomed to tortures extreme enough to produce despair, desperation, and further crimes—tortures under which "a man's heart is taken from him, and there is given to him the heart of a beast," as said by one of these law-produced criminals before his execution. We should not have been told, as by a chief justice of Australia, that the discipline was "carried to an extent of *suffering, such as to render death desirable, and to induce many prisoners to seek it under its most appalling aspects.*" Sir G. Arthur would not have had to testify that, in Van Diemen's Land, convicts committed murder for the purpose "*of being sent up to Hobart Town for trial, though aware that in the ordinary course they must be executed within a fortnight after arrival;*" nor would tears of commiseration have been drawn from Judge Burton's eyes, by one of these cruelly-used transports placed before him for sentence. In brief, had abstract equity joined with immediate expediency in devising convict discipline, not only would untold suffering, degradation, and mortality have been pre-

vented ; but those who were responsible for atrocities like those above-named, would not themselves be chargeable with crime, as we now hold them to be.

Probably we shall meet with a less general assent when, as a further benefit which the guidance of absolute morality would have conferred, we instance the prevention of such methods as those in use at Pentonville. How the silent and the separate systems are negatived by abstract justice we shall by and by see. For the present, the position we have to defend is, that these systems are bad. That but a moderate per-centage of the prisoners subjected to them are re-convicted, may be true ; though, considering the fallaciousness of negative statistics, this by no means proves that those not re-convicted are reformed. But the question is not solely, how many prisoners are prevented from again committing crime ? A further question is, how many of them have become self-supporting members of society ? It is notorious that this prolonged denial of human intercourse not unfrequently produces insanity or imbecility ; and on those who remain sane, its depressing influence must almost of necessity entail serious debility, bodily and mental.<sup>1</sup> Indeed, we think it probable that much of the apparent success is due to an enfeeblement which incapacitates for crime as much as for industry. Our own objection to such methods, however, has always been, that their effect on the moral nature is the very reverse of that required. Crime is anti-social—is prompted by self-regarding feelings, and checked by social feelings. The natural prompter of right conduct to others, and the natural opponent of misconduct to others, is sympathy ; for out of sympathy grow both the kindly emotions, and that sentiment of justice which restrains us from aggressions. Well, this sympathy, which makes society possible, is culti-

<sup>1</sup> Mr. Baillie-Cochrane says :—“The officers at the Dartmoor prison inform me that the prisoners who arrive there even after one year’s confinement at Pentonville, may be distinguished from the others by their miserable downcast look. In most instances their brain is affected, and they are unable to give satisfactory replies to the simplest questions.”

vated by social intercourse. By habitual participation in the pleasures of others, the faculty is strengthened; and whatever prevents this participation, weakens it—an effect commonly illustrated in the selfishness of old bachelors. Hence, therefore, we contend that shutting up prisoners within themselves, or forbidding all interchange of feeling, inevitably deadens such sympathies as they have; and so tends rather to diminish than to increase the moral check to transgression. This *a priori* conviction, which we have long entertained, we now find confirmed by facts. Captain Maconochie states, as a result of observation, that a long course of separation so fosters the self-regarding desires, and so weakens the sympathies, as to make even well-disposed men very unfit to bear the little trials of domestic life on their return to their homes. Thus there is good reason to think that, while silence and solitude may cow the spirit or undermine the energies, it cannot produce true reformation.

“But how can it be shown,” asks the reader, “that these injudicious penal systems are inequitable? Where is the method which will enable us to say what kind of punishment is justified by absolute morality, and what kind is not?” These questions we will now attempt to answer.

So long as the individual citizen pursues the objects of his desires without diminishing the equal freedom of any of his fellow citizens to do the like, society cannot equitably interfere with him. While he contents himself with the benefits won by his own energies, and attempts not to intercept any of the benefits similarly won for themselves by others, or any of those which Nature has conferred on them; no legal penalties can rightly be inflicted on him. But when, by murder, theft, assault, or minor aggression, he has broken through these limits, the community is warranted alike by absolute and by relative expediency in putting him under restraint. On the relative expediency of doing this we need say nothing: it is demonstrated by social experience. Its absolute expe-

diency not being so manifest, we will proceed to point out how it is deducible from the ultimate laws of life.

All life depends on the maintenance of certain natural relations between actions and their results. This is true of life in both its lowest and its highest forms. If respiration does not supply oxygen to the blood, as in the normal order of things it should do, but instead supplies carbonic acid, death very soon results. If the swallowing of food is not followed by the usual organic sequences—the contractions of the stomach, and the pouring into it of gastric juice—indigestion arises, and the energies flag. If active movements of the limbs fail in exciting the heart to supply blood more rapidly, or if the extra current propelled by the heart is greatly retarded by an aneurism through which it passes, speedy prostration ensues—vitality rapidly ebbs. In which, and endless like cases, we see that bodily life depends on the maintenance of the established connexions between physiological causes and their consequences. Among the intellectual processes, the same thing holds. If certain impressions made on the senses do not induce the appropriate muscular adjustments—if the brain is clouded with wine, or consciousness is pre-occupied, or the perceptions are naturally obtuse; the bodily movements are so ill-controlled that accidents ensue. Where, as in paralytic patients, the natural link between mental impressions and the appropriate movements is broken, the life is greatly vitiated. And when, as during insanity, evidence fitted, according to the usual order of thought, to produce certain convictions, produces convictions of an opposite kind; conduct is reduced to chaos, and life endangered or cut short. So it is with the more involved phenomena. Just as we here find that, throughout both its physical and intellectual divisions, healthful life implies continuance of the established successions of antecedents and consequents among our vital actions; so shall we find it throughout the moral division. In our dealings with external Nature and our fellow men, there are relations of cause and

effect, on the maintenance of which, as on the maintenance of the internal ones above instanced, complete life depends. Conduct of this or that kind tends ever to bring results which are pleasurable or painful—action to bring its appropriate reaction; and the welfare of every one demands that these natural connexions shall not be interfered with. To speak more specifically, we see that in the order of Nature, inactivity entails want; and that, conversely, by activity are secured the means of material benefit. There is an ordained connexion between exertion and the fulfilment of certain imperative needs. If, now, this ordained connexion is broken—if labour of body and mind have been gone through, and the produce of the labour is intercepted by another, one of the conditions to complete life is unfulfilled. The defrauded person is physically injured by deprivation of the wherewithal to make good the wear and tear he had undergone; and if the robbery be continually repeated, he must die. Where all men are dishonest a reflex evil results. When, throughout a society, the natural relation between labour and its produce is habitually broken, the lives of many are not only directly undermined; but the lives of all are indirectly undermined by the destruction of the motive for labour, and by the consequent poverty. Thus, to demand that there shall be no breach of the normal sequence between labour and the benefits obtained by labour, is to demand that the laws of life shall be respected. What we call the right of property, is simply a corollary from certain necessary conditions to complete existence: it is a formulated recognition of the necessary relation between expenditure of force and the need for force-sustaining objects obtainable by the expenditure of force—a recognition in full of a relation which cannot be wholly ignored without causing death. And all else regarded as individual rights, are indirect implications of like nature—similarly insist on certain relations between man and man, as conditions without which there cannot be completely maintained that correspondence between inner and outer actions



which constitutes life. It is not, as some moralists have absurdly asserted, that such rights are derived from human legislation; nor is it, as asserted by others with absurdity almost as great, that there is no basis for them save the inductions of immediate expediency. These rights are deducible from the established connexions between our acts and their results. As certainly as there are conditions which must be fulfilled before life can exist, so certainly are there conditions which must be fulfilled before complete life can be enjoyed by the respective members of a society; and those which we call the requirements of justice, simply answer to the most important of such conditions.

Hence, if life is our legitimate aim—if absolute morality means, as it does, conformity to the laws of complete life; then absolute morality warrants the restraint of those who force their fellow-citizens into non-conformity. Our justification is, that life is impossible save under certain conditions; that it cannot be perfect unless these conditions are maintained unbroken; and that if it is right for us to live, it is right for us to remove any one who either breaks these conditions in our persons or constrains us to break them.

Such being the basis of our right to coerce the criminal, there next come the questions:—What is the legitimate extent of the coercion? Can we from this source derive authority for certain demands on him? and are there any similarly-derived limits to such demands? To both these questions there are affirmative answers.

First, we find authority for demanding restitution or compensation. Conformity to the laws of life being the substance of absolute morality; and the social regulations which absolute morality dictates, being those which make this conformity possible; it is a manifest corollary that whoever breaks these regulations, may be justly required to undo, as far as possible, the wrong he has done. The object being to maintain the conditions essential to complete life, it follows that, when one of these conditions has been transgressed, the first thing to

be required of the transgressor is, that he shall put matters as nearly as may be in the state they previously were. The property stolen shall be restored, or an equivalent for it given. Any one injured by an assault, shall have his surgeon's bill paid, compensation for lost time, and also for the suffering he has borne. And similarly in all cases of infringed rights.

Second, we are warranted by this highest authority in restricting the actions of the offender as much as is needful to prevent further aggressions. Any citizen who will not allow others to fulfil the conditions to complete life—who takes away the produce of his neighbour's labour, or deducts from that bodily health and comfort which his neighbour has earned by good conduct, must be forced to desist. And society is warranted in using such force as may be found requisite. Equity justifies the fellow-citizens of such a man in limiting the free exercise of his faculties to the extent necessary for preserving the free exercise of their own faculties.

But now mark that absolute morality countenances no restraint beyond this—no gratuitous inflictions of pain, no revengeful penalties. Complete life being the end of morality; and the conditions it insists on being such as make possible this complete life to all members of a community; we cannot rightly abrogate these conditions, even in the person of a criminal, further than is needful to prevent greater abrogations of them. Freedom to fulfil the laws of life being the thing insisted on, to the end that the sum of life may be the greatest possible; it follows that the life of the offender must be taken into account as an item in this sum; and that we must permit him to live as completely as consists with social safety. It is commonly said that the criminal loses all his rights. This may be so according to law, but it is not so according to justice. Such portion of them only is justly taken away, as cannot be left to him without danger to the community. Those exercises of faculty, and consequent benefits, which are possible under the neces-

sary restraint, cannot be equitably denied. If any do not think it proper that we should be thus regardful of an offender's claims, let them consider for a moment the lesson which Nature reads us. We do not find that those divinely-ordained laws of life by which bodily health is maintained, are miraculously suspended in the person of the prisoner. In him, as in others, good digestion waits on appetite. If he is wounded, the healing process goes on with the usual rapidity. When he is ill, as much effect is expected from the *vis medicatrix nature* by the medical officer, as in one who has not transgressed. His perceptions yield him guidance as they did before he was imprisoned; and he is capable of much the same pleasurable emotions. When we thus see that the beneficent arrangements of things, are no less uniformly sustained in his person than in that of another; are we not bound to respect in his person such of these beneficent arrangements as we have power to thwart? are we not bound to interfere with the laws of life no further than is absolutely needful? If any still hesitate, there is another lesson for them having the same implication. Whoso disregards any one of those simpler laws of life out of which, as we have shown, the moral laws originate, has to bear the evil necessitated by the transgression—just that, and no more. If, careless of your footing, you fall, the consequent bruise, and possibly some constitutional disturbance entailed by it, are all you have to suffer: there is not the further gratuitous penalty of a cold or an attack of small-pox. If you have eaten something which you know to be indigestible, there follow certain visceral derangements and their concomitants; but, for your physical sin, there is no vengeance in the shape of a broken bone or a spinal affection. The punishments, in these and other cases, are neither greater nor less than flow from the natural working of things. Well, should we not with all humility follow this example? Must we not infer that, similarly, a citizen who has transgressed the conditions to social welfare, ought to bear the needful penalties and re-

straints, but nothing beyond these. Is it not clear that neither by absolute morality nor by Nature's precedents, are we warranted in visiting on him any pains besides those involved in remedying, as far as may be, the evil committed, and preventing other such evils? To us it seems manifest that if society exceeds this, it trespasses against the criminal.

Those who think, as many will probably do, that we are tending towards a mischievous leniency, will find that the next step in our argument disposes of any such objection; for while equity forbids us to punish the criminal otherwise than by making him suffer the natural consequences, these, when rigorously enforced, are quite severe enough.

Society having proved in the high court of absolute morality, that the offender must make restitution or compensation, and submit to the restraints requisite for public safety; and the offender having obtained from the same court the decision, that these restraints shall be no greater than the specified end requires; society thereupon makes the further demand that, while living in durance, the offender shall maintain himself; and this demand absolute morality at once endorses. The community having taken measures of self-preservation; and having inflicted on the aggressor no punishments or disabilities beyond those involved in these necessary measures; is no further concerned in the matter. With the support of the prisoner it has no more to do than before he committed the crime. It is the business of society simply to defend itself against him; and it is his business to live as well as he can under the restrictions society is obliged to impose on him. All he may rightly ask is, to have the opportunity of labouring, and exchanging the produce of his labour for necessaries; and this claim is a corollary from that already admitted, that his actions shall not be restricted more than is needful for the public safety. With these opportunities, however, he must make the best of his position. He must be content to gain as good a livelihood as the circumstances permit; and if he cannot employ his powers to

the best advantage, if he has to work hard and fare scantily, these evils must be counted among the penalties of his transgression—the natural reactions of his wrong action.

On this self-maintenance equity sternly insists. The reasons which justify his imprisonment, equally justify the refusal to let him have any other sustenance than he earns. He is confined that he may not further interfere with the complete living of his fellow-citizens—that he may not again intercept any of those benefits which the order of Nature has conferred on them, or any of those procured by their exertions and careful conduct. And he is required to support himself for exactly the same reasons—that he may not interfere with others' complete living—that he may not intercept the benefits they earn. For, if otherwise, whence must come his food and clothing? Directly from the public stores, and indirectly from the pockets of all tax-payers. And what is the property thus abstracted from tax-payers? It is the equivalent of so much benefit earned by labour. It is so much means to complete living. And when this property is taken away—when the toil has been gone through, and the produce it should have brought is intercepted by the tax-gatherer on behalf of the convict—the conditions to complete life are broken: the convict commits by deputy a further aggression on his fellow-citizens. It matters not that such abstraction is made according to law. We are here considering the dictum of that authority which is above law; and which law ought to enforce. And this dictum we find to be, that each individual shall take the evils and benefits of his own conduct—that the offender must suffer, as far as is possible, all pains entailed by his offence; and must not be allowed to visit part of them on the innocent. Unless the criminal maintains himself, he indirectly commits an additional crime. Instead of restitution, he makes a new aggression. Instead of repairing the breach he has made in the conditions to complete social life, he widens this breach. He inflicts on others that very injury which the restraint imposed

on him was to prevent. As certainly, therefore, as such restraint is warranted by absolute morality ; so certainly does absolute morality warrant us in refusing him gratuitous support.

These, then, are the requirements of an equitable penal system :—That the aggressor shall make restitution or compensation ; that he shall be placed under the restraints requisite for social security ; that neither any restraints beyond these, nor any gratuitous penalties, shall be inflicted on him ; and that while living in confinement, or under surveillance, he shall maintain himself. We are not prepared to say that such dictates may at once be fully obeyed. Already we have admitted that the deductions of absolute expediency must, in our transition state, be qualified by the inductions of relative expediency. We have pointed out that in rude times, the severest criminal codes were justified by morality ; if, without them, crime could not be repressed and social safety insured. Whence, by implication, it follows that our present methods of treating criminals are warranted, if they come as near to those of pure equity as circumstances permit. That any system now feasible must fall short of the ideal sketched out, is very possible. It may be that the enforcement of restitution or compensation, is in many cases impracticable. It may be that on some convicts, penalties more severe than abstract justice demands must be inflicted. On the other hand, it may be that entire self-maintenance would entail on the wholly-unskilled criminal, a punishment too grievous to be borne. But any such immediate shortcomings do not affect our argument. All we insist on is, that the commands of absolute morality shall be obeyed as far as possible—that we shall fulfil them up to those limits beyond which experiment proves that more evil than good results—that, ever keeping in view the ideal, each change we make shall be towards its realization.

But now we are prepared to say, that this ideal may be in great part realized at the present time. Experience in

various countries, under various circumstances, has shown that immense benefits result from substituting for the old penal systems, systems that approximate to that above indicated. Germany, France, Spain, England, Ireland, and Australia, send statements to the effect that the most successful criminal discipline, is a discipline of decreased restraints and increased self-dependence. And the evidence proves the success to be greatest, where the nearest approach is made to the arrangements prescribed by abstract justice. We shall find the facts striking: some of them even astonishing.

When M. Obermair was appointed Governor of the Munich State-Prison—

“He found from 600 to 700 prisoners in the jail, in the worst state of insubordination, and whose excesses, he was told, defied the harshest and most stringent discipline; the prisoners were all chained together, and attached to each chain was an iron weight, which the strongest found difficulty in dragging along. The guard consisted of about 100 soldiers, who did duty not only at the gates and around the walls, but also in the passages, and even in the workshops and dormitories; and, strangest of all protections against the possibility of an outbreak or individual invasion, twenty to thirty large savage dogs, of the bloodhound breed, were let loose at night in the passages and courts to keep their watch and ward. According to his account the place was a perfect Pandemonium, comprising, within the limits of a few acres, the worst passions, the most slavish vices, and the most heartless tyranny.”

M. Obermair gradually relaxed this harsh system. He greatly lightened the chains; and would, if allowed, have thrown them aside. The dogs, and nearly all the guards, were dispensed with; and the prisoners were treated with such consideration as to gain their confidence. Mr. Baillie-Cochrane, who visited the place in 1852, says the prison-gates were

“Wide open, without any sentinel at the door, and a guard of only twenty men idling away their time in a guard-room off the entrance-hall. . . . None of the doors were provided with bolts and bars; the only security was an ordinary lock, and as in most of the rooms the key was not turned, there was no obstacle to the men walking

into the passage. . . . Over each workshop some of the prisoners with the best characters were appointed overseers, and M. Obermair assured me that if a prisoner transgressed a regulation, his companions generally told him, 'es ist verboten' (it is forbidden), and it rarely happened that he did not yield to the opinion of his fellow-prisoners. . . . Within the prison walls every description of work is carried on; the prisoners, divided into different gangs and supplied with instruments and tools, make their own clothes, repair their own prison walls, and forge their own chains, producing various specimens of manufacture which are turned to most excellent account—the result being, that each prisoner, by occupation and industry, maintains himself; the surplus of his earnings being given him on his emancipation, avoids his being parted with in a state of destitution."

And further, the prisoners "associate in their leisure hours, without any check on their intercourse, but at the same time under an efficient system of observation and control"—an arrangement by which, after many years' experience, M. Obermair asserts that morality is increased.

And now what has been the result? During his six-years' government of the Kaisers-lauten (the first prison under his care), M. Obermair discharged 132 criminals, of which number 123 have since conducted themselves well, and 7 have been recommitted. From the Munich prison, between 1843 and 1845, 298 prisoners were discharged. "Of these, 246 have been restored, improved, to society. Those whose characters are doubtful, but have not been remanded for any criminal act, 26; again under examination, 4; punished by the police, 6; remanded, 8; died, 8." This statement, says M. Obermair, "is based on irrefutable evidence." And to the reality of his success, we have the testimony not only of Mr. Baillie-Cochrane, but of the Rev. C. H. Townsend, Mr. George Combe, Mr. Matthew Hill, and Sir John Milbanke, our Envoy at the Court of Bavaria.

Take, again, the case of Mettray. Every one has heard something about Mettray, and its success as a reformatory of juvenile criminals. Observe how nearly the successful system there pursued, conforms to the abstract principles above enunciated.



This "Colonie Agricole" is "without wall or enclosure of any sort, for the purposes at least of confinement;" and except when for some fault a child is temporarily put in a cell, there is no physical restraint. The life is industrial: the boys being brought up to trades or agriculture as they prefer; and all the domestic services being discharged by them. "They all do their work by the *piece*;" are rewarded according to the judgment of the *chef d'atelier*; and a portion being placed at the disposal of the child, the rest is deposited in the savings-bank at Tours. "A boy in receipt of any money has to make payment for any part of his dress which requires to be renewed before the stated time arrives at which fresh clothing is given out; . . . . on the other hand, if his clothes are found in good condition at such time, he receives the benefit of it by having the money which would have been laid out in clothes placed to his account." Two hours per day are allowed for play. Part-singing is taught; and if a boy shows any turn for drawing he receives a little instruction in it. . . . . Some of the boys also are formed into a fire-brigade, and have rendered at times substantial assistance in the neighbourhood." In which few leading facts do we not clearly see that the essential peculiarities are—no more restraint than is absolutely necessary; self-support as far as possible; extra benefits earned by extra labour; and as much gratifying exercise of faculties as the circumstances permit.

The "intermediate system" which has of late been carried out with much success in Ireland, exemplifies, in a degree, the practicability of the same general principles. Under this system, prisoners working as artizans are allowed "such a modified degree of liberty as shall in various ways prove their power of self-denial and self-dependence, in a manner wholly incompatible with the rigid restraints of an ordinary prison." An offender who has passed through this stage of probation, is tested by employment "on messenger's duties daily throughout the city, and also in special works required

by the department outside the prison-walls. The performance of the duties of messengers entails their being out until seven or eight in the evening, unaccompanied by any officer; and although a small portion of their earnings is allowed them weekly, and they would have the power of compromising themselves if so disposed, not one instance has as yet taken place of the slightest irregularity, or even the want of punctuality, although careful checks have been contrived to detect either, should it occur." A proportion of their prison-earnings is set aside for them in a savings-bank; and to this they are encouraged to add during their period of partial freedom, with a view to subsequent emigration. The results are:— "In the penitentiary the greatest possible order and regularity, and an amount of willing industry performed that cannot be obtained in the prisons." Employers to whom prisoners are eventually transferred, "have on many occasions returned for others in consequence of the good conduct of those at first engaged." And according to Captain Crofton's pamphlet of 1857, out of 112 conditionally discharged during the previous year, 85 were going on satisfactorily, "9 have been discharged too recently to be spoken of, and 5 have had their licences revoked. As to the remaining 13, it has been found impossible to obtain accurate information, but it is supposed that 5 have left the country, and 3 enlisted."

The "mark system" of Captain Maconochie, is one which more fully carries out the principle of self-maintenance, under restraints no greater than are needful for safety. The plan is to join with time-sentences certain labour-sentences—specific tasks to be worked out by the convicts. "No rations, or other supplies of any kind, whether of food, bedding, clothing, or even education or indulgences, to be given *gratuitously*, but all to be made exchangeable, at fixed rates, at the prisoners' own option, for marks previously earned; it being understood, at the same time, that only those shall count towards liberation which remain over and above all so exchanged; the prisoners being thus caused to depend for every necessary

on their own good conduct; and their prison-offences to be in like manner restrained by corresponding fines imposed according to the measures of each." The use of marks, which thus play the part of money, was first introduced by Captain Maconochie in Norfolk Island. Describing the working of his method, he says—

"First, it gave me wages and then fines. One gave me willing and progressively-skilled labourers, and the other saved me from the necessity of imposing brutal and demoralizing punishments. . . . My form of money next gave me school fees. I was most anxious to encourage education among my men, but as I refused them rations gratuitously, so I would not give them schooling either, but compelled them to yield marks to acquire it. . . . I never saw adult schools make such rapid progress. . . . My form of money next gave me bailbonds in cases of minor or even great offences; a period of close imprisonment being wholly or in part remitted in consideration of a sufficient number of other prisoners of good character becoming bound, under a penalty, for the improved conduct of the culprit."

Even in the establishment of a sick-club and a burial-club, Captain Maconochie applied "the inflexible principle of giving nothing for nothing." That is to say, here, as throughout, he made the discipline of the prisoners as much like the discipline of ordinary life as possible: let them experience just such good or evil as naturally flowed from their conduct—a principle which he rightly avows as the only true one. What were the effects? The extreme debasement of Norfolk-Island convicts was notorious; and on a preceding page we have described some of the horrible sufferings inflicted on them. Yet, starting with these most demoralized of criminals, Captain Maconochie obtained highly-favourable results. "In four years," he says, "I discharged 920 doubly-convicted men to Sydney, of whom only 20, or 2 per cent., had been re-convicted up to January, 1845;" while, at the same time, the ordinary proportion of re-convicted Van Diemen's Land men, otherwise trained, was 9 per cent. "Captain Maconochie," writes Mr. Harris in his *Convicts and Settlers*, "did more for the reformation of these unhappy wretches, and amelioration of their physical circumstances, than the most sanguine prac-

tical mind could beforehand have ventured to hope." Another witness says—"a reformation far greater than has been hitherto effected in any body of men by any system, either before or after yours, has taken place in them." "As pastor of the island, and for two years a magistrate, I can prove that at no period was there so little crime," writes the Rev. B. Naylor. And Thomas H. Dixon, Chief Superintendent of Convicts in Western Australia, who partially introduced the system there in 1856, asserts that not only was the amount of work done under it extraordinary, but that "even although the characters of some of the party were by no means good previously (many of them being men whose licences had been revoked in England), yet the transformation which in this and all other respects they underwent, was very remarkable indeed." If such were the results, when the method was imperfectly carried out (for the Government all along refused to give any fixed value to the marks as a means to liberation); what might be expected if its motives and restraints were allowed their full influence?

Perhaps, however, of all evidence, the most conclusive is that afforded by the prison of Valencia. When, in 1835, Colonel Montesinos was appointed governor, "the average of re-committals was from 30 to 35 per cent. per annum—nearly the same that is found in England and other countries in Europe; but such has been the success of his method, that for the last three years *there has not been even one re-committal to it*, and for the ten previous years they did not, on an average, exceed 1 per cent." And how has this marvellous change been brought about? By diminished restraint and industrial discipline. The following extracts, taken irregularly from Mr. Hoskins's *Spain as it is*, will prove this:—

"When first the convict enters the establishment he wears chains, but on his application to the commander they are taken off, unless he has not conducted himself well."

"There are a thousand prisoners, and in the whole establishment I did not see above three or four guardians to keep them in order. They say there are only a dozen old soldiers, and not a bar or bolt

that might not be easily broken—apparently not more fastenings than in any private house.”

“When a convict enters, he is asked what trade or employment he will work at or learn, and above forty are open to him. . . . There are weavers and spinners of every description; . . . blacksmiths, shoemakers, basketmakers, ropemakers, joiners, cabinet-makers, making handsome mahogany drawers; and they had also a printing machine hard at work.”

“The labour of every description for the repair, rebuilding, and cleaning the establishment, is supplied by the convicts. They were all most respectful in demeanour, and certainly I never saw such a good-looking set of prisoners, useful occupations (and other considerate treatment) having apparently improved their countenances. . . . And besides a ‘garden for exercise planted with orange trees,’ there was also a poultry yard for their amusement, with pheasants and various other kinds of birds; washing-houses, where they wash their clothes; and a shop, where they can purchase, if they wish, tobacco and other little comforts out of one-fourth of the profits of their labour, which is given to them. Another fourth they are entitled to when they leave; the other half goes to the establishment, *and often this is sufficient for all expenses, without any assistance from the Government.*”

Thus the highest success, regarded by Mr. Hoskins as “really a miracle,” is achieved by a system most nearly conforming to those dictates of absolute morality on which we have insisted. The convicts are almost, if not quite, self-supporting. They are subject neither to gratuitous penalties nor unnecessary restrictions. While made to earn their living, they are allowed to purchase such enjoyments as consist with their confinement: the avowed principle being, in the words of Colonel Montesinos, to “give as much latitude to their free agency as can be made conformable to discipline at all.” Thus they are (as we found that equity required they should be) allowed to live as satisfactorily as they can, under such restraints only as are needful for the safety of their fellow-citizens.

To us it appears extremely significant that there should be so close a correspondence between *à priori* conclusions, and the results of experiments tried without reference to such conclusions. On the one hand, neither in the doctrines of pure equity with which we set out, nor in the corollaries drawn

from them, is there any mention of criminal-reformation : our concern has been solely with the rights of citizens and convicts in their mutual relations. On the other hand, those who have carried out the improved penal systems above described, have had almost solely in view the improvement of the offender : the just claims of society, and of those who sin against it, having been left out of the question. Yet the methods which have succeeded so marvellously in decreasing criminality, are the methods which most nearly fulfil the requirements of abstract justice. May we not, in this, see clear proof of harmony with the ordained principles of things ?

That the most equitable system is the one best calculated to reform the offender, may indeed be deductively shown. The internal experience of every one must prove to him, that excessive punishment begets, not penitence, but indignation and hatred. So long as an aggressor suffers nothing beyond the evils that have naturally resulted from his misconduct—so long as he perceives that his fellow-men have done no more than was needful for self-defence—he has no excuse for anger ; and is led to contemplate his crime and his punishment as cause and effect. But if gratuitous sufferings are inflicted on him, a sense of injustice is produced. He regards himself as an injured man. He cherishes animosity against all who have brought this harsh treatment on him. Glad of any plea for forgetting the injury he has done to others, he dwells instead on the injury others have done to him. Thus nurturing a desire for revenge rather than atonement, he re-enters society not better but worse ; and if he does not commit further crimes, as he often does, he is restrained by the lowest of motives—fear. Again, this industrial discipline, to which criminals subject themselves under a purely equitable system, is the discipline they especially need. Speaking generally, we are all compelled to work by the necessities of our social existence. For most of us this compulsion suffices ; but there are some whose aversion to labour

cannot be thus overcome. Not labouring, and needing sustenance, they are compelled to obtain it in illegitimate ways; and so bring on themselves the legal penalties. The criminal class being thus in great part recruited from the idle class; and the idleness being the source of the criminality; it follows that a successful discipline must be one which shall cure the idleness. The natural compulsions to labour having been eluded, the thing required is that the offender shall be so placed that he cannot elude them. And this is just what is done under the system we advocate. Its action is such that men whose natures are ill-adapted to the conditions of social life, bring themselves into a position in which a better adaptation is forced on them by the alternative of starvation. Lastly, let us not forget that this discipline which absolute morality dictates, is salutary, not only because it is industrial, but because it is voluntarily industrial. As we have shown, equity requires that the confined criminal shall be left to maintain himself—that is, shall be left to work much or little, and to take the consequent plenitude or hunger. When, therefore, under this sharp but natural spur, a prisoner begins to exert himself, he does so by his own will. The process which leads him into habits of labour, is a process by which his self-control is strengthened; and this is what is wanted to make him a better citizen. It is to no purpose that you make him work by external coercion; for when he is again free, and the coercion absent, he will be what he was before. The coercion must be an internal one, which he shall carry with him out of prison. It avails little that you force him to work; he must force himself to work. And this he will do, only when placed in those conditions which equity dictates.

Here, then, we find a third order of evidences. Psychology supports our conclusion. The various experiments above detailed, carried out by men who had no political or ethical theories to propagate, have established facts which we find to be quite concordant, not only with the deductions of absolute

morality, but also with the deductions of mental science. Such a combination of different kinds of proof, cannot, we think, be resisted.

And now let us try whether, by pursuing somewhat further the method thus far followed, we can see our way to the development of certain improved systems that are coming into use.

Equity requires that the restraint of the criminal shall be as great as is needful for the safety of society; but not greater. In respect to the *quality* of the restraint, there is little difficulty in interpreting this requirement; but there is considerable difficulty in deciding on the *duration* of the restraint. No obvious mode presents itself of finding out how long a transgressor must be held in legal bondage, to insure society against further injury from him. A longer period than is necessary, implies an actual injustice to the offender. A shorter period than is necessary, implies a potential injustice to society. And yet, without good guidance, one or other of these extremes is almost sure to be fallen into.

At present, the lengths of penal sentences are fixed in a manner that is wholly empirical. For offences defined in certain technical ways, Acts of Parliament assign transportations and imprisonments, having durations not greater than so much nor less than so much: these partially-determined periods being arbitrarily fixed by legislators, under the promptings of moral feeling. Within the assigned limits the judge exercises his discretion; and in deciding on the time over which the restraint shall extend, he is swayed, partly by the special quality of the offence, partly by the circumstances under which it was committed, partly by the prisoner's appearance and behaviour, partly by the character given to him. And the conclusion he arrives at after consideration of these data, depends very much on his individual nature—his moral bias and his theories of human conduct. Thus the mode of fixing the lengths of penal restraints, is from begin-



ning to end, little else than guessing. How ill this system of guessing works, we have abundant proofs. "Justices' justice," which illustrates it in its simplest form, has become a by-word; and the decisions of higher criminal courts, continually err in the directions of both undue severity and undue lenity. Daily do there occur cases of extremely-trifling transgression visited with imprisonment of considerable length; and daily do there occur cases in which the punishment is so inadequate, that the offender time after time commits new crimes, when time after time discharged from custody.

Now the question is, whether in place of this purely empirical method which answers so ill, equity can guide us to a method which shall more correctly adjust the period of restraint to the requirement in each case. We believe it can. We believe that by following out its dictates, we shall arrive at a method that is in great measure self-acting; and therefore less liable to be vitiated by errors of individual judgment or feeling.

We have seen that were the requirements of absolute morality consulted, every transgressor would be compelled to make restitution or compensation. Throughout a considerable range of cases, this would itself involve a period of restraint varying in proportion to the magnitude of the offence. It is true that when the malefactor possessed ample means, the making restitution or compensation would usually be to him but a slight punishment. But though in these comparatively few cases, the regulation would fall short of its object, in so far as its effect on the criminal was concerned; yet in the immense majority of cases—in all cases of aggressions committed by the poorer members of the community—it would act with efficiency. It would involve periods of detention that would be longer or shorter according as the injury done was greater or less; and according as the transgressor was idle or industrious. And although between the injury done by an offender and his moral turpitude, there is no constant and exact proportion; yet the greatness of the

injury done, affords, on the average of cases, a better measure of the discipline required, than do the votes of Parliamentary majorities and the guesses of judges.

But our guidance does not end here. An endeavour still further to do that which is strictly equitable, will carry us still nearer to a correct adjustment of discipline to delinquency. When, having enforced restitution, we insist on some adequate guarantee that society shall not be again injured, and accept any guarantee that is sufficient; we open the way to a self-acting regulator of the period of detention. Already our laws are in many cases satisfied with securities for future good behaviour. Already this system manifestly tends to separate the more vicious from the less vicious: seeing that, on the average, the difficulty of finding securities is great in proportion as the character is bad. And what we propose is, that this system, now confined to particular kinds of offences, shall be made general. But let us be more specific.

A prisoner on his trial calls witnesses to testify to his previous character—that is, if his character has been tolerably good. The evidence thus given weighs more or less in his favour, according to the respectability of the witnesses, their number, and the nature of their testimony. Taking into account these several elements, the judge forms his conception of the delinquent's general disposition; and modifies the length of punishment accordingly. Now, may we not fairly say that if the current opinion respecting a convict's character could be brought *directly* to bear in qualifying the statutory sentence, instead of being brought *indirectly* to bear, as at present, it would be a great improvement? Clearly the estimate made by a judge from such testimony, must be far less accurate than the estimate made by the prisoner's neighbours and employers. Clearly, too, the opinion expressed by such neighbours and employers in the witness-box, is less trustworthy than an opinion which entailed on them serious responsibility. *The desideratum is, that a prisoner's sentence shall be qualified by the judgment of those who have had life-long*

*experience of him ; and that the sincerity of this judgment shall be tested by their readiness to act on it.*

But how is this to be done ? A very simple method of doing it has been suggested.<sup>1</sup> When a convict has fulfilled his task of making restitution or compensation, let it be possible for one or other of those who have known him, to take him out of confinement, on giving adequate bail for his good behaviour. Always premising that such an arrangement shall be possible only under an official permit, to be withheld if the prisoner's conduct has been unsatisfactory ; and always premising that the person who offers bail shall be of good character and means ; let it be competent for such a one to liberate a prisoner by being bound on his behalf for a specific sum, or by undertaking to make good any injury which he may do to his fellow-citizens within a specified period. This will doubtless be thought a startling proposal. We shall, however, find good reasons to believe it might be safely acted on — nay, we shall find facts proving the success of a plan that is obviously less safe.

Under such an arrangement, the liberator and the convict would usually stand in the relation of employer and employed. Those to be thus conditionally released, would be ready to work for somewhat lower wages than were usual in their occupation ; and those who became bound for them, besides having this economy of wages as an incentive, would be in a manner guaranteed by it against the risk undertaken. In working for less money, and in being under the surveillance of his master, the convict would still be undergoing a mitigated discipline. And while, on the one hand, he would be put on his good behaviour by the consciousness that his master might at any time cancel the contract and surrender him back to the authorities ; he would, on the other hand, have a remedy against his master's harshness, in the option of returning to prison, and there maintaining himself for the remainder of his term.

<sup>1</sup> We owe the suggestion to Mr. Octavius H. Smith.

Observe next, that the difficulty of obtaining such conditional release, would vary with the gravity of the offence that had been committed. Men guilty of heinous crimes would remain in prison; for none would dare to become responsible for their good behaviour. Any one convicted a second time, would remain unbailed for a much longer period than before; seeing that having once inflicted loss on some one bound for him, he would not again be so soon offered the opportunity of doing the like: only after a long period of good behaviour testified to by prison-officers, would he be likely to get another chance. Conversely, those whose transgressions were not serious, and who had usually been well-conducted, would readily obtain recognizances; while to venial offenders this qualified liberation would come as soon as they had made restitution. Moreover, when innocent persons had been pronounced guilty, as well as in cases of solitary misdeeds being committed by those of really superior natures, the system we have described would supply a remedy. From the wrong verdicts of the law, and its mistaken estimates of turpitude, there would be an appeal; and long-proved worth would bring its reward in the mitigation of grievous injustices.

A further advantage would by implication result, in the shape of a long industrial discipline for those who most needed it. Speaking generally, diligent and skilful workmen, who were on the whole useful members of society, would, if their offences were not serious, soon obtain employers to give bail for them. Whereas, members of the especially criminal class—the idle and the dissolute—would remain long in confinement; since, until they had been brought by the discipline of self-maintenance under restraint, to something like industrial efficiency, employers would not be tempted to become responsible for them.

We should thus have a self-acting test, not only of the length of restraint required for social safety, but also of that apprenticeship to labour which many convicts need; while

there would be supplied a means of rectifying sundry failures and excesses of our present system. The plan would practically amount to an extension of trial by jury. At present, the State calls in certain of a prisoner's fellow-citizens to decide whether he is guilty or not guilty: the judge, under guidance of the penal laws, being left to decide what punishment he deserves, if guilty. Under the arrangement we have described, the judge's decision would admit of modification by a jury of the convict's neighbours. And this natural jury, while it would be best fitted by previous knowledge of the man, to form an opinion, would be rendered cautious by the sense of grave responsibility: inasmuch as any one of its number, who gave a conditional release, would do so at his own peril.

And now mark, that all the evidence forthcoming to prove the safety and advantages of the "intermediate system," proves, still more conclusively, the safety and advantages of this system which we would substitute for it. What we have described, is nothing more than an intermediate system reduced to a natural instead of an artificial form—carried out with natural checks instead of artificial checks. If, as Captain Crofton has experimentally shown, it is safe to give a prisoner conditional liberation, on the strength of good conduct during a certain period of prison-discipline; it is evidently safer to let his conditional liberation depend not alone on good conduct while under the eyes of his jailors, but also on the character he had earned during his previous life. If it is safe to act on the judgments of officials whose experience of a convict's behaviour is comparatively limited, and who do not suffer penalties when their judgments are mistaken; then, manifestly, it is safer (when such officials can show no reason to the contrary), to act on the additional judgment of one who has not only had better opportunities of knowing the convict, but who will be a serious loser, if his judgment proves erroneous. Further, that surveillance over each conditionally-liberated prisoner, which the "intermediate system" exercises,

would be still better exercised, when, instead of going to a strange master in a strange district, the prisoner went to some master in his own district ; and under such circumstances, it would be easier to get such information respecting his after-career as is found desirable. There is every reason to think that such a method would be workable. If, on the recommendation of the officers, Captain Crofton's prisoners obtain employers "who have on many occasions returned for others, in consequence of the good conduct of those at first engaged ;" still better would be the action of the system when, instead of the employers having "every facility placed at their disposal for satisfying themselves as to the antecedents of the convict," they were already familiar with his antecedents.

Finally, let us not overlook the fact, that this course is the only one which, while duly consulting social safety, is also entirely just to the prisoner. As we have shown, the restraints imposed on a criminal are warranted by absolute equity, only to the extent needful to prevent further aggressions on his fellow-men ; and when his fellow-men impose greater restraints than these, they trespass against him. Hence, when a prisoner has worked out his task of making restitution, and, so far as is possible, undone the wrong he had done ; society is, in strict justice, bound to accept any arrangement which adequately protects its members against further injury. And if, moved by the expectation of profit, or other motive, any citizen sufficiently substantial and trustworthy, will take on himself to hold society harmless, society must agree to his proposal. All it can rightly require is, that the guarantee against contingent injury *shall* be adequate ; which, of course, it never can be where the contingent injury is of the gravest kind. No bail could compensate for murder ; and therefore in this, and other extreme crimes, society would rightly refuse any such guarantee, even if offered ; which it would be very unlikely to be.

Such, then, is our code of prison-ethics. Such is the ideal

which we ought to keep ever in view when modifying our penal system. Again we say, as we said at the outset, that the realization of such an ideal wholly depends on the advance of civilization. Let no one carry away the impression that we regard all these purely equitable regulations as immediately practicable. Though they may be partially carried out, we think it highly improbable, or rather impossible, that they should at present be carried out in full. The number of offenders, the low average of enlightenment and morality, the ill-working of administrative machinery, and above all, the difficulty of obtaining officials of adequate intelligence, good feeling, and self-control, are obstacles that must long stand in the way of a system so complex as that which morality dictates. And we here assert, as emphatically as before, that the harshest penal system is ethically justified, if it is as good as the circumstances of the time permit. However great the cruelties it inflicts, yet if a system theoretically more equitable would not be a sufficient terror to evil-doers, or could not be worked, from lack of officers sufficiently judicious, honest, and humane—if less rigorous methods would entail a diminution of social security; then the methods in use are extrinsically good, though intrinsically bad: they are, as before said, the least wrong, and therefore relatively right.

Nevertheless, as we have endeavoured to prove, it is immensely important that, while duly considering the relatively right, we should keep the absolutely right constantly in view. True as it is, that in this transition state, our conceptions of the ultimately expedient must ever be qualified by our experience of the proximately expedient; it is not the less true that the proximately expedient cannot be determined unless the ultimately expedient is known. Before we can say what is as good as the time permits, we must say what is abstractedly good; for the first idea involves the last. We must have some fixed standard, some invariable measure, some constant clue: otherwise we shall inevitably be misled by the sug-

gestions of immediate policy, and wander away from the right, rather than advance towards it. This conclusion is, we think, fully borne out by the facts we have cited. In other cases, as well as in the case of penal discipline, the evidence shows how terribly we have erred from obstinately refusing to consult first principles, and clinging to an unreasoning empiricism. Though, during civilization, grievous evils have occasionally arisen from attempts suddenly to realize absolute rectitude ; yet a greater sum total of evils has arisen from the more usual course of ignoring absolute rectitude. Age after age, effete institutions have been maintained far longer than they would else have been ; and equitable arrangements have been needlessly postponed. Is it not time for us to profit by past lessons ?



## STATE-TAMPERINGS WITH MONEY AND BANKS.

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AMONG unmitigated rogues, mutual trust is impossible. Among people of absolute integrity, mutual trust would be unlimited. These are truisms. Given a nation made up entirely of liars and thieves, and all trade among its members must be carried on either by barter or by a currency of intrinsic value: nothing in the shape of *promises* to pay can pass in place of *actual* payments; for, by the hypothesis, such promises being never fulfilled, will not be taken. On the other hand, given a nation of perfectly honest men—men as careful of others' rights as of their own—and nearly all trade among its members may be carried on by memoranda of debts and claims, eventually written off against each other in the books of bankers; seeing that as, by the hypothesis, no man will ever issue more memoranda of debts than his goods and his claims will liquidate, his paper will pass current for whatever it represents: coin will be needed only as a measure of value, and to facilitate those small transactions for which it is physically the most convenient. These we take to be self-evident truths.

From them follows the corollary, that in a nation neither wholly honest nor wholly dishonest, there may, and eventually will, be established a mixed currency—a currency partly of intrinsic value, and partly of credit-value. The ratio between the quantities of these two kinds of currency, will be determined by a combination of several causes.

Supposing that there is no legislative meddling to disturb the natural balance, it is clear from what has already been

said, that, fundamentally, the proportion of coin to paper will depend on the average conscientiousness of the people. Daily experience must ever be teaching each citizen, which other citizens he can put confidence in, and which not. Daily experience must also ever be teaching him how far this confidence may be carried. From personal experiment, and from current opinion which results from the experiments of others, every one must learn, more or less truly, what credit may safely be given. If all find that their neighbours are little to be trusted, but few promises-to-pay will circulate. And the circulation of promises-to-pay, will be great, if all find that the fulfilment of trading engagements is tolerably certain. The degree of *honesty* characterizing a community, being the first regulator of a credit-currency; the second is the degree of *prudence*. Other things equal, it is manifest that among a sanguine, speculative people, promissory payments will be taken more readily, and will therefore circulate more largely, than among a cautious people. Two men having exactly the same experiences of mercantile risks, will, under the same circumstances, respectively give credit and refuse it, if they are respectively rash and circumspect. And two nations thus contrasted in prudence, will be similarly contrasted in the relative quantities of notes and bills in circulation among them. Nay, they will be more than similarly contrasted in this respect; seeing that the prevailing incautiousness, besides making each citizen unduly ready to give credit, will also produce in him an undue readiness to risk his own capital in speculations, and a consequent undue demand for credit from other citizens. There will be both an increased pressure for credit, and a diminished resistance; and therefore a more than proportionate excess of paper-currency. Of this national characteristic and its consequences, we have a conspicuous example in the United States.

To these comparatively permanent moral causes, on which the ordinary ratio of hypothetical to real money in a community depends, have to be added certain temporary moral

and physical causes, which produce temporary variations in the ratio. The prudence of any people is liable to more or less fluctuation. In railway-maniacs and the like, we see that irrational expectations may spread through a whole nation, and lead its members to give and take credit almost recklessly. But the chief causes of temporary variation are those which directly affect the quantity of available capital. Wars, deficient harvests, or losses consequent on the misfortunes of other nations, will, by impoverishing the community, inevitably lead to an increase in the ratio of *promissory payments* to *actual payments*. For what must be done by the citizen disabled by such causes from meeting his engagements?—the shopkeeper whose custom has greatly fallen off in consequence of the high price of bread; or the manufacturer whose goods lie in his ware-rooms unsaleable; or the merchant whose foreign correspondents fail him? As the proceeds of his business do not suffice to liquidate the claims on him that are falling due, he is compelled either to find other means of liquidating them, or to stop payment. Rather than stop payment, he will, of course, make temporary sacrifices—will give high terms to whoever will furnish him with the desired means. If, by depositing securities with his banker, he can get a loan at an advanced rate of interest, well. If not, by offering an adequate temptation, he may mortgage his property to some one having good credit; who either gives bills, or draws on his banker for the sum agreed on. In either case, extra promises to pay are issued; or, if the difficulty is met by accommodation-bills, the same result follows. And in proportion to the number of citizens obliged to resort to one or other of these expedients, must be the increase of promissory payments in circulation. Reduce the proposition to its most general terms, and it becomes self-evident. Thus:—All bank-notes, cheques, bills of exchange, etc., are so many *memoranda of claims*: no matter what may be the technical distinctions among them, on which upholders of the “currency principle” seek to establish their dogma, they all come within

this definition. Under the ordinary state of things, the amount of available wealth in the hands, or at the command, of those concerned, suffices to meet these claims as they are severally presented for payment ; and they are paid either by equivalents of intrinsic value, as coin, or by giving in place of them other memoranda of claims on some body of undoubted solvency. But now let the amount of available wealth in the hands of the community be greatly diminished. Suppose a large portion of the necessaries of life, or coin, which is the most exchangeable equivalent of such necessaries, has been sent abroad to support an army, or to subsidize foreign states ; or, suppose that there has been a failure in the crops of grain or potatoes. Suppose, in short, that, for the time being, the nation is impoverished. What follows ? It follows that a proportion of the claims cannot be liquidated. And what must happen from their non-liquidation ? It must happen that those unable to liquidate them will either fail, or they will redeem them by directly or indirectly giving in exchange certain memoranda of claims on their stock-in-trade, houses, or land. That is, such of these claims as the deficient *floating* capital does not suffice to meet, are replaced by claims on *fixed* capital. The memoranda of claims which should have *disappeared* by liquidation, *re-appear* in a new form ; and the quantity of paper-currency is increased. If the war, famine, or other cause of impoverishment continues, the process is repeated. Those who have no further fixed capital to mortgage, become bankrupt ; while those whose fixed capital admits, mortgage still further, and still further increase the promissory payments in circulation. Manifestly, if the members of a community whose annual returns but little more than suffice to meet their annual debts, suddenly lose part of their annual returns, they must become proportionately in debt to each other ; and the documents expressive of debt must be proportionately multiplied.

This *à priori* conclusion is in perfect harmony with mercantile experience. The last hundred years have furnished

repeated illustrations of its truth. After the enormous export of gold in 1795-6 for war-loans to Germany, and to meet bills drawn on the Treasury by British agents abroad; and after large advances made under a moral compulsion by the Bank of England to the Government; there followed an excessive issue of bank-notes. In 1796-7, there were failures of the provincial banks; a panic in London; a run on the nearly-exhausted Bank of England; and a suspension of cash-payments—a State-authorized refusal to redeem promises to pay. In 1800, the further impoverishment consequent on a bad harvest, joined with the legalized inconvertibility of bank-notes, entailed so great a multiplication of them as to cause their depreciation. During the temporary peace of 1802, the country partly recovered itself; and the Bank of England would have liquidated the claims on it, had the Government allowed. On the subsequent resumption of war, the phenomenon was repeated: as in later times it has been on each occasion when the community, carried away by irrational hopes, has locked up an undue proportion of its capital in permanent works. Moreover, we have still more conclusive illustrations—illustrations of the sudden cessation of commercial distress and bankruptcy, resulting from a sudden increase of credit-circulation. When, in 1793, there came a general crash, mainly due to an unsafe banking-system which had grown up in the provinces *in consequence* of the Bank of England monopoly—when the pressure, extending to London, became so great as to alarm the Bank-directors and to cause them suddenly to restrict their issues, thereby producing a frightful multiplication of bankruptcies; the Government (to mitigate an evil indirectly produced by legislation) determined to issue Exchequer-Bills to such as could give adequate security. That is, they allowed hard-pressed citizens to mortgage their fixed capitals for equivalents of State-promises to pay, with which to liquidate the demands on them. The effect was magical. £2,202,000 only of Exchequer-Bills were required. The consciousness that loans could be had, in many cases

prevented them from being needed. The panic quickly subsided. And all the loans were very soon repaid. In 1825, again, when the Bank of England, after having intensified a panic by extreme restriction of its issues, suddenly changed its policy, and in four days advanced £5,000,000 notes on all sorts of securities, the panic at once ceased.

And now, mark two important truths. As just implied, those expansions of paper-circulation which naturally take place in times of impoverishment or commercial difficulty, are highly salutary. This issuing of securities for future payment when there does not exist the wherewith for immediate payment, is a means of mitigating national disasters. The process amounts to a postponement of trading-engagements that cannot at once be met. And the alternative questions to be asked respecting it are—Shall all the merchants, manufacturers, shopkeepers, etc., who, by unwise investments, or war, or famine, or great losses abroad, have been in part deprived of the means of meeting the claims upon them, be allowed to mortgage their fixed capital? or, by being debarred from issuing memoranda of claims on their fixed capital, shall they be made bankrupts? On the one hand, if they are permitted to avail themselves of that credit which their fellow-citizens willingly give them on the strength of the proffered securities, most of them will tide over their difficulties: in virtue of that accumulation of surplus capital ever going on, they will be able, by-and-by, to liquidate their debts in full. On the other hand, if, as they must else be, they are forthwith bankrupted, carrying with them others, and these again others, there follows a disastrous loss to all the creditors: property to an immense amount being peremptorily sold at a time when there can be comparatively few able to buy, must go at a great sacrifice; and those who in a year or two would have been paid in full, must be content with 10s. in the pound. Added to which evil comes the still greater one—an extensive damage to the organization of society. Numerous importing, producing, and distributing

establishments are swept away ; tens of thousands of their dependents are left without work ; and before the industrial fabric can be repaired, a long time must elapse, much labour must lie idle, and great distress be borne. Between these alternatives, who, then, can pause ? Let this spontaneous remedial process follow its own course, and the evil will either be in great measure eventually escaped, or will be spread little by little over a considerable period. Stop this remedial process, and the whole evil, falling at once on society, will bring wide-spread ruin and misery.

The second of these important truths, is, that an expanded circulation of promises to pay, caused by absolute or relative impoverishment, contracts to its normal limits as fast as the need for expansion disappears. For the conditions of the case imply, that all who have mortgaged their fixed capitals to obtain the means of meeting their engagements, have done so on very unfavourable terms ; and are therefore under a strong stimulus to pay off their mortgages as quickly as possible. Every one who, at a time of commercial pressure, gets a loan from a bank, has to give high interest. Hence, as fast as prosperity returns, and his profits accumulate, he gladly escapes this heavy tax by repaying the loan : in doing which he takes back to the bank as large a number of its promises to pay as he originally received ; and so diminishes the note-circulation as much as his original transaction had increased it. Considered apart from technical distinctions, a banker performs, in such case, the function of an agent in whose name traders issue negotiable memoranda of claims on their estates. The agent is already known to the public as one who issues memoranda of claims on capital that is partly floating and partly fixed—memoranda of claims that have an established character, and are convenient in their amounts. What the agent does under the circumstances specified, is to issue more such memoranda of claims, on the security of more fixed and partially-fixed, capital put in his possession. His clients hypothecate their estates through the banker, instead

of doing it in their own names, simply because of the facilities which he has and which they have not. And as the banker requires to be paid for his agency and his risk, his clients redeem their estates, and close these special transactions with him, as quickly as they can : thereby diminishing the amount of credit-currency.

Thus we see that the balance of a mixed currency is, under all circumstances, self-adjusting. Supposing considerations of physical convenience out of the question, the average ratio of paper to coin is primarily dependent on the average trustworthiness of the people, and secondarily dependent on their average prudence. When, in consequence of unusual prosperity, there is an unusual increase in the number of mercantile transactions, there is a corresponding increase in the quantity of currency, both metallic and paper, to meet the requirement. And when from war, famine, or over-investment, the available wealth in the hands of citizens is insufficient to pay their debts to each other, the memoranda of debts in circulation, acquire an increased ratio to the quantity of gold : to decrease again as fast as the excess of debts can be liquidated.

That these self-regulating processes act but imperfectly, is doubtless true. With an imperfect humanity, they cannot act otherwise than imperfectly. People who are dishonest, or rash, or stupid, will inevitably suffer the penalties of dishonesty, or rashness, or stupidity. If any think that by some patent legislative mechanism, a society of bad citizens can be made to work together as well as a society of good ones, we shall not take pains to show them the contrary. If any think that the dealings of men deficient in uprightness and foresight, may be so regulated by cunningly-devised Acts of Parliament, as to secure the effects of uprightness and foresight, we have nothing to say to them. Or if there are any (and we fear there are numbers) who think that in times of commercial difficulty, resulting from impoverishment or other natural causes, the evil can be staved-off by some ministerial



sleight of hand, we despair of convincing them that the thing is impossible. See it or not, however, the truth is, that the State can do none of these things. As we shall show, the State can, and sometimes does, *produce* commercial disasters. As we shall also show, it can, and sometimes does, *exacerbate* the commercial disasters otherwise produced. But while it can create and can make worse, it cannot prevent.

All which the State has to do in the matter, is to discharge its ordinary office—to administer justice. The enforcement of contracts is one of the functions included in its general function of maintaining the rights of citizens. And among other contracts which it is called on to enforce, are the contracts expressed on credit-documents—bills of exchange, cheques, bank-notes. If any one issues a promise-to-pay, either on demand or at specified date, and does not fulfil that promise; the State, when appealed to by the creditor, is bound in its protective capacity to obtain fulfilment of the promise, at whatever cost to the debtor; or such partial fulfilment of it as his effects suffice for. The State's duty in the case of the currency, as in other cases, is sternly to threaten the penalty of bankruptcy on all who make engagements which they cannot meet; and sternly to inflict the penalty when called on by those aggrieved. If it falls short of this, mischief ensues. If it exceeds this, mischief ensues. Let us glance at the facts.

Had we space to trace in detail the history of the Bank of England—to show how the privileges contained in its first charter were bribes given by a distressed Government in want of a large loan—how, soon afterwards, the law which forbad a partnership of more than six persons from becoming bankers, was passed to prevent the issue of notes by the South-Sea Company, and so to preserve the Bank-monopoly—how the continuance of State-favours to the Bank-corresponded with the continuance of the Bank's claims on the State; we should see that, from the first, banking-legislation has

been an organized injustice. But passing over earlier periods, let us begin with the events that closed the last century. Our rulers of that day had entered into a war—whether with adequate reason, needs not here be discussed. They had lent vast sums in gold to their allies. They had demanded large advances from the Bank of England, which the Bank durst not refuse. They had thus necessitated an excessive issue of notes by the Bank. That is, they had so greatly diminished the floating capital of the community, that engagements could not be met; and an immense number of promises-to-pay, took the place of actual payments. Soon after, the fulfilment of these promises became so difficult that it was forbidden by law; that is, cash-payments were suspended. Now for these results—for the national impoverishment and consequent abnormal condition of the currency, the State was responsible. How much of the blame lay with the governing classes, and how much with the nation at large, we do not pretend to say. What it concerns us here to note, is, that the calamity arose from the acts of the ruling power. When, again, in 1802, after a short peace, the available capital of the community had so far increased that the redemption of promises-to-pay became possible, and the Bank of England was anxious to begin redeeming them, the legislature interposed its veto; and so continued the evils of an inconvertible paper-currency after they would naturally have ceased. Still more disastrous, however, were the results that by-and-by ensued from State-meddlings. Cash-payments having been suspended—the Government, instead of enforcing all contracts, having temporarily cancelled a great part of them, by saying to every banker, “You shall not be called on to liquidate in coin the promises-to-pay which you issue;” the natural checks to the multiplication of promises-to-pay, disappeared. What followed? Banks being no longer required to cash their notes in coin; and easily obtaining from the Bank of England, supplies of its notes in exchange for fixed securities; were ready to make advances to almost any extent. Not

being obliged to raise their rate of discount in consequence of the diminution of their available capital; and reaping a profit by every loan (of notes) made on fixed capital; there arose both an abnormal facility of borrowing, and an abnormal desire to lend. Thus were fostered the wild speculations of 1809—speculations that were not only thus fostered, but were in great measure *caused* by the previous over-issue of notes; which, by further exaggerating the natural rise of prices, increased the apparent profitableness of investments. And all this, be it remembered, took place at a time when there should have been rigid economy—at a time of impoverishment consequent on continued war—at a time when, but for law-produced illusions, there would have been commercial straitness and a corresponding carefulness. Just when its indebtedness was unusually great, the community was induced still further to increase its indebtedness. Clearly, then, the progressive accumulation and depreciation of promises-to-pay, and the commercial disasters which finally resulted from it in 1814-15-16, when ninety provincial banks were broken and more dissolved, were State-produced evils: partly due to a war which, whether necessary or not, was carried on by the Government; and greatly exacerbated by the currency-regulations which that Government had made.

Before passing to more recent facts, let us parenthetically notice the similarly-caused degradation of the currency which had previously arisen in Ireland. When examined by a parliamentary committee in 1804, Mr. Colville, one of the directors of the Bank of Ireland, stated that before the passing of the Irish Bank-Restriction-Bill—the bill by which cash-payments were suspended—the directors habitually met any unusual demand for gold, by diminishing their issues. That is to say, in the ordinary course of business, they raised their rate of discount whenever the demand enabled them; and so, both increased their profits and warded-off the danger of bankruptcy. During this unregulated period, their note-circulation was between £600,000 and £700,000. But as

soon as they were guaranteed by law against the danger of bankruptcy, their circulation began rapidly to increase; and very soon reached £3,000,000. The results, as proved before the committee, were these:—The exchange with England became greatly depressed; nearly all the good specie was exported to England; it was replaced in Dublin (where small notes could not be issued) by a base coinage, adulterated to the extent of fifty per cent.; and elsewhere it was replaced by notes payable at twenty-one days' date, issued by all sorts of persons, for sums down even as low as sixpence. And this excessive multiplication of small notes was *necessitated* by the impossibility of otherwise carrying on retail trade, after the disappearance of the silver coinage. For these disastrous effects, then, legislation was responsible. The swarms of "silver-notes" resulted from the exportation of silver; the exportation of silver was due to the great depression of the exchange with England; this great depression arose from the excessive issue of notes by the Bank of Ireland; and this excessive issue followed from their legalized inconvertibility. Yet, though these facts were long ago established by a committee of the House of Commons, the defenders of the "currency-principle" are actually blind enough to cite this multiplication of sixpenny-promises-to-pay, as *proving the evils of an unregulated currency!*

Returning now to the case of the Bank of England, let us pass at once to the Act of 1844. While still a protectionist—while still a believer in the beneficence of law as a controller of commerce—Sir Robert Peel undertook to stop the recurrence of monetary crises, like those of 1825, 1836, and 1839. Overlooking the truth that, when not *caused* by the meddlings of legislators, a monetary crisis is due, either to an absolute impoverishment, or to a relative impoverishment consequent on speculative over-investment; and that for the bad season or the imprudence causing this, there is no remedy; he boldly proclaimed that "*it is better to prevent the paroxysm than to excite it:*" and he brought forward the Bank-Act of

1844 as the means of prevention. How merciless has been Nature's criticism on this remnant of Protectionism, we all know. The monetary sliding-scale has been as great a failure as its prototype. Within three years arose one of these crises which were to have been prevented. Within another ten years has arisen a second of these crises. And on both occasions this intended safeguard has so intensified the evil, that a temporary repeal of it has been imperative.

We should have thought that, even without facts, every one might have seen that it is impossible, by Act of Parliament, to prevent imprudent people from doing imprudent things; and, if facts were needed, we should have thought that our commercial history up to 1844 supplied a sufficiency. But a superstitious faith in State-ordinances is regardless of such facts. And we doubt not that even now, though there have been two glaring failures of this professed check on over-speculation—though the evidence conclusively shows that the late commercial catastrophes have had nothing whatever to do with the issue of bank-notes, but, as in the case of the Western Bank of Scotland, occurred along with diminished issues—and though in Hamburg, where the “currency principle” has been rigidly carried out to the very letter, there has been a worse crisis than anywhere else; yet there will remain plenty of believers in the efficiency of Sir R. Peel's prophylactic.

But, as already said, the measure has not only failed: it has made worse the panics it was to have warded-off. And it was sure to do this. As shown at the outset, the multiplication of promises-to-pay that occurs at a period of impoverishment caused by war, famine, over-investment, or losses abroad, is a salutary process of mitigation—is a mode of postponing actual payments till actual payments are possible—is a preventive of wholesale bankruptcy—is a spontaneous act of self-preservation. We pointed out, not only that this is an *à priori* conclusion; but that many facts in our own mercantile history illustrate at once the naturalness, the

benefits, the necessity of it. And if this conclusion needs enforcing by further evidence, we have it in the recent events at Hamburg. In that city, there are no notes in circulation but such as are represented by actual equivalents of bullion or jewels in the bank: no one is allowed, as with us, to obtain bank-promises-to-pay in return for securities. Hence it resulted that when the Hamburg merchants, lacking their remittances from abroad, were suddenly deprived of the wherewith to meet their engagements; and were prevented by law from getting bank-promises-to-pay by pawning their estates; bankruptcy swept them away wholesale. And what finally happened? To prevent universal ruin, the Government was obliged to decree that all bills of exchange coming due, should have a month's grace; and that there should be immediately formed a State-Discount-Bank—an office for issuing State-promises-to-pay in return for securities. That is, having first by its restrictive law ruined a host of merchants, the Government was obliged to legalize that postponement of payments, which, but for its law, would have spontaneously taken place. With such further confirmation of an *à priori* conclusion, can it be doubted that our late commercial difficulties were intensified by the measure of 1844? Is it not, indeed, notorious in the City, that the progressively-increasing demand for accommodation, was in great part due to the conviction that, in consequence of the Bank-Act, there would shortly be no accommodation at all? Does not every London merchant know that his neighbours who had bills coming due, and who saw that by the time they were due the Bank would discount only at still higher rates, or not at all, decided to lay in beforehand the means of meeting those bills? Is it not an established fact, that the hoarding thus induced, not only rendered the pressure on the Bank greater than it would otherwise have been, but, by taking both gold and notes out of circulation, made the Bank's issues temporarily useless to the general public? Did it not happen in this case, as in 1793 and 1825, that when at last restriction

was removed, the mere consciousness that loans could be had, itself prevented them from being required? And, indeed, is not the simple fact that the panic quickly subsided when the Act was suspended, sufficient proof that the Act had, in great measure, produced it.

See, then, for what we have to thank legislative meddling. During ordinary times Sir R. Peel's Act, by obliging the Bank of England, and occasionally provincial banks, to keep more gold than they would otherwise have kept (and if it has not done this it has done nothing), has inflicted a tax on the nation to the extent of the interest on such portion of the gold-currency as was in excess of the need: a tax which, in the course of the last thirteen years, has probably amounted to some millions. And then, on the two occasions when there have arisen the crises that were to have been prevented, the Act, after having intensified the pressure, made bankrupt a great number of respectable firms that would else have stood, and increased the distress not only of the trading but of the working population; has been twice abandoned at the moment when its beneficence was to have been conspicuous. It has been a cost, a mischief, and a failure. Yet such is the prevailing delusion, that, judging from appearances, it will be maintained!

"But," ask our opponents, "shall the Bank be allowed to let gold drain out of the country without check? Shall it have permission to let its reserve of gold diminish so greatly as to risk the convertibility of its notes? Shall it be enabled recklessly to increase its issues, and so produce a depreciated paper-currency?"

Really, in these Free-trade days, it seems strange to have to answer questions like these; and, were it not for the confusion of facts and ideas that legislation has produced, it would be inexcusable to ask them.

In the first place, the common notion that the draining of gold out of the country is intrinsically, and in all cases, an evil, is nothing but a political superstition—a superstition in

part descended from the antique fallacy that money is the only wealth, and in part from the maxims of an artificial, law-produced state of things, under which the exportation of gold really *was* a sign of a corrupted currency: we mean, during the suspension of cash-payments. Law having cancelled millions of contracts which it was its duty to enforce—law having absolved bankers from liquidating their promises in coin, having rendered it needless to keep a stock of coin with which to liquidate them, and having thus taken away that natural check which prevents the over-issue and depreciation of notes—law having partly suspended that *home* demand for gold which ordinarily competes with and balances the *foreign* demand; there resulted an abnormal exportation of gold. By-and-by, it was seen that this efflux of gold was a consequence of the over-issue of notes; and that the accompanying high price of gold, as paid for in notes, proved the depreciation of notes. And then it became an established doctrine, that an adverse state of the foreign exchanges, indicating a drain of gold, was significant of an excessive circulation of notes; and that the issue of notes should be regulated by the state of the exchanges.

This unnatural condition of the currency having continued for a quarter of a century, the concomitant doctrine rooted itself in the general mind. And now mark one of the multitudinous evils of legislative meddling. This artificial test, good only for an artificial state, has survived the return to a natural state; and men's ideas about currency have been reduced by it to chronic confusion.

The truth is, that while, during a legalized inconvertibility of bank-notes, an efflux of gold may, and often does, indicate an excessive issue of bank-notes; under ordinary circumstances, an efflux of gold has little or nothing to do with the issue of bank-notes; but is determined by purely mercantile causes. And the truth is, that so far from an efflux of gold thus brought about by mercantile causes, being an evil, it is a good. Leaving out of the question, as of course we must,



such exportations of gold as take place for the support of armies abroad; the cause of efflux is either an actual plethora of all commodities, gold included, which results in gold being sent out of the country for the purpose of foreign investment; or else an abundance of gold as compared with other leading commodities. And while, in this last case, the efflux of gold indicates some absolute or relative impoverishment of the nation, it is a means of mitigating the bad consequences of that impoverishment. Consider the question as one of political economy, and this truth becomes obvious. Thus:—The nation habitually requires for use and consumption certain quantities of commodities, of which gold is one. These commodities are severally and collectively liable to fall short; either from deficient harvests, from waste in war, from losses abroad, or from too great a diversion of labour or capital in some special direction. When a scarcity of some chief commodity or necessary occurs, what is the remedy? The commodity of which there is an excess (or if none is in excess, then that which can best be spared) is exported in exchange for an additional supply of the deficient commodity. And, indeed, the whole of our foreign trade, alike in ordinary and extraordinary times, consists in this process. But when it happens either that the commodity which we can best spare is not wanted abroad; or (as recently) that a chief foreign customer is temporarily disabled from buying; or that the commodity which we can best spare is gold; then gold itself is exported in exchange for the thing which we most want. Whatever form the transaction takes, it is nothing but bringing the supplies of various commodities into harmony with the demands for them. The fact that gold is exported, is simply a proof that the need for gold is less than the need for other things. Under such circumstances an efflux of gold will continue, and *ought* to continue, until other things have become relatively so abundant, and gold relatively so scarce, that the demand for gold is equal to other demands. And he who would prevent this process, is about as wise as the

miser, who, finding his house without food, chooses to starve rather than draw upon his purse.

The second question—"Shall the Bank have permission to let its reserve of gold diminish so greatly as to risk the convertibility of its notes?" is not more profound than the first. It may fitly be answered by the more general question—"Shall the merchant, the manufacturer, or the shopkeeper, be allowed so to invest his capital as to risk the fulfilment of his engagements?" If the answer to the first be "No," it must be "No" to the second. If to the second it be "Yes," it must be "Yes" to the first. Any one who proposed that the State should oversee the transactions of every trader, so as to insure his ability to cash all demands as they fell due, might with consistency argue that bankers should be under like control. But while no one has the folly to contend for the one, nearly all contend for the other. One would think that the banker acquired, in virtue of his occupation, some abnormal desire to ruin himself—that while traders in other things are restrained by a wholesome dread of bankruptcy, traders in capital have a longing to appear in the *Gazette*, which law alone can prevent them from gratifying! Surely the moral checks which act on other men will act on bankers. And if these moral checks do not suffice to produce perfect security, we have ample proof that no cunning legislative checks will supply their place. The current notion that bankers can, and will, if allowed, issue notes to any extent, is one of the absurdest illusions—an illusion, however, which would never have arisen but for the vicious over-issues induced by law. The truth is, that in the first place, a banker *cannot* increase his issue of notes at will: it has been proved by the unanimous testimony of all bankers who have been examined before successive parliamentary committees, that "the amount of their issues is exclusively regulated by the extent of local dealings and expenditure in their respective districts;" and that any notes issued in excess of the demand are "immediately returned to them." And the truth is, in

the second place, that a banker *will not*, on the average of cases, issue more notes than in his judgment it is safe to issue; seeing that if his promises-to-pay in circulation, are greatly in excess of his available means of paying them, he runs an imminent risk of having to stop payment—a result, of which he has no less a horror than other men. If facts are needed in proof of this, they are furnished by the history of both the Bank of England and the Bank of Ireland; which, before they were debauched by the State, habitually regulated their issues according to their stock of bullion; and would probably always have been still more careful, but for the consciousness that there was the State-credit to fall back upon.

The third question—"Shall the Bank be allowed to issue notes in such numbers as to cause their depreciation?" has, in effect, been answered in answering the first two. There can be no depreciation of notes so long as they are exchangeable for gold on demand. And so long as the State, in discharge of its duty, insists on the fulfilment of contracts, the alternative of bankruptcy must ever be a restraint on such over-issue of notes as endangers that exchangeability. The truth is, that the bugbear of depreciation is one that would have been unknown but for the sins of governments. In the case of America, where there have been occasional depreciations, the sin has been a sin of omission: the State has not enforced the fulfilment of contracts—has not forthwith bankrupted those who failed to cash their notes; and, if accounts are true, has allowed those to be mobbed who brought back far-wandering notes for payment.<sup>1</sup> In all other cases, the sin has been a sin of commission. The depreciated paper-currency in France, during the revolution, was a State-currency. The depreciated paper-currencies of Austria and Russia, have been State-currencies. And the only depreciated paper-currency we have known, has been to all intents and purposes a State-currency. It was the State which, in

<sup>1</sup> This was written in 1858; when "greenbacks" were unknown.

1795-6, *forced* upon the Bank of England that excessive issue of notes which led to the suspension of cash-payments. It was the State which, in 1802, *forbad* the resumption of cash-payments, when the Bank of England wished to resume them. It was the State which, during a quarter of a century, *maintained* that suspension of cash-payments from which the excessive multiplication and depreciation of notes resulted. The entire corruption was entailed by State-expenditure, and established by State-warrant. Yet now, the State affects a virtuous horror of the crime committed at its instigation! Having contrived to shuffle-off the odium on to the shoulders of its tools, the State gravely lectures the banking-community upon its guilt; and with sternest face passes measures to prevent it from sinning!

We contend, then, that neither to restrain the efflux of gold, nor to guard against the over-issue of bank-notes, is legislative interference warranted. If Government will promptly execute the law against all defaulters, the self-interest of bankers and traders will do the rest: such evils as would still result from mercantile dishonesties and imprudences, being evils which legal regulation may augment but cannot prevent. Let the Bank of England, in common with every other bank, simply consult its own safety and its own profits; and there will result just as much check as should be put, on the efflux of gold or the circulation of paper; and the only check that can be put on the doings of speculators. Whatever leads to unusual draughts on the resources of banks, immediately causes a rise in the rate of discount—a rise dictated both by the wish to make increased profits, and the wish to avoid a dangerous decrease of resources. This raised rate of discount, prevents the demand from being so great as it would else have been—alike checks undue expansion of the note-circulation; stops speculators from making further engagements; and, if gold is being exported, diminishes the profit of exportation. Successive rises successively increase these effects; until eventually none will give

the rate of discount demanded, save those in peril of stopping payment ; the increase of the credit-currency ceases ; and the efflux of gold, if it is going on, is arrested by the home-demand out-balancing the foreign demand. And if in times of great pressure, and under the temptation of high discounts, banks allow their circulation to expand to a somewhat dangerous extent ; the course is justified by the necessities. As shown at the outset, the process is one by which banks, on the deposit of good securities, loan their credit to traders who but for loans would be bankrupt. And that banks should run some risks to save hosts of solvent men from inevitable ruin, few will deny. Moreover, during a crisis which thus runs its natural course, there will really occur that purification of the mercantile world, which many think can be effected only by some Act-of-Parliament ordeal. Under the circumstances described, men who have adequate securities to offer, will get bank-accommodation ; but those who, having traded without capital or beyond their means, have not, will be denied it, and will fail. Under a free system, the good will be sifted from the bad ; whereas the existing restrictions on bank-accommodation, tend to destroy good and bad together.

Thus it is not true that there need special regulations to prevent the inconvertibility and depreciation of notes. It is not true that but for legislative supervision, bankers would let gold drain out of the country to an undue extent. It is not true that these "currency theorists" have discovered a place at which the body-politic would bleed to death, but for a State-styptic.

What else we have to say on the general question, may best be joined with some commentaries on provincial and joint-stock banking ; to which let us now turn.

Government, to preserve the Bank-of-England-monopoly, having enacted that no partnership exceeding six persons should become bankers ; and the Bank of England having

refused to establish branches in the provinces; it happened, during the latter half of the last century, when the industrial progress was rapid and banks much needed, that numerous private traders, shopkeepers and others, began to issue notes payable on demand. And when, of the four hundred small banks which had thus grown up in less than fifty years, a great number gave way under the first pressure—when on several subsequent occasions like results occurred—when in Ireland, where the Bank-of-Ireland-monopoly had been similarly guaranteed, it happened that out of fifty private provincial banks, forty became bankrupt—and when, finally, it grew notorious that in Scotland, where there had been no law limiting the number of partners, a whole century had passed with scarcely a single bank-failure; legislators at length decided to abolish the restriction which had entailed such mischiefs. Having, to use Mr. Mill's words, "actually made the formation of safe banking-establishments a punishable offence"—having, for one hundred and twenty years, maintained a law which first caused great inconvenience and then extensive ruin, time after time repeated; Government in 1826 conceded the liberty of joint-stock banking: a liberty which the good easy public, not distinguishing between a right done and a wrong undone, regarded as a great boon.

But the liberty was not without conditions. Having previously, in anxiety for its *protégé*, the Bank of England, been reckless of the banking-security of the community at large, the State, like a repentant sinner rushing into asceticism, all at once became extremely solicitous on this point; and determined to put guarantees of its own devising, in place of the natural guarantee of mercantile judgment. To intending bank-shareholders it said—"You shall not unite on such publicly-understood conditions as you think fit; and get such confidence as will naturally come to you on those conditions." And to the public it said—"You shall not put trust in this or that association in proportion as, from the character of its members and constitution, you judge it to be worthy of

trust." But to both it said—"You shall the one give, and the other receive, my infallible safeguards."

And now what have been the results? Every one knows that these safeguards have proved anything but infallible. Every one knows that these banks with State-constitutions have been especially characterized by instability. Every one knows that credulous citizens, with a faith in legislation which endless disappointments fail to diminish, have trusted implicitly in these law-devised securities; and, not exercising their own judgments, have been led into ruinous undertakings. The evils of substituting artificial guarantees for natural ones, which the clear-sighted long ago discerned, have, by the late catastrophes, been made conspicuous to all.

When commencing this article, we had intended to dwell on this point. For though the mode of business which brought about these joint-stock-bank-failures, was, for weeks after their occurrence, time after time clearly described; yet nowhere did we see drawn the obvious corollary. Though in three separate City-articles of *The Times*, it was explained that, "relying upon the ultimate liability of large bodies of infatuated shareholders, the discount houses supply these banks with unlimited means, looking not to the character of the bills sent up, but simply to the security afforded by the Bank endorsement;" yet, in none of them was it pointed out that, but for the law of unlimited liability, this reckless trading would not have gone on. More recently, however, this truth has been duly recognized, alike in Parliament and in the Press; and it is therefore needless further to elucidate it. We will simply add, that as, if there had been no law of unlimited liability, the London houses would not have discounted these bad bills; and as, in that case, these provincial joint-stock-banks could not have given these enormous credits to insolvent speculators; and as, if they had not done this, they would not have been ruined; it follows, inevitably, that these joint-stock-bank-failures have been *law-produced disasters*.

A measure for further increasing the safety of the provincial public, was that which limited the circulation of provincial bank-notes. At the same time that it established a sliding-scale for the issues of the Bank of England, the Act of 1844 fixed the maximum circulation of every provincial bank-of-issue; and forbad any further banks-of-issue. We have not space to discuss at length the effects of this restriction: which must have fallen rather hardly on those especially-careful bankers who had, during the twelve weeks preceding the 27th April, 1844, narrowed their issues to meet any incidental contingencies; while it gave a perennial license to such as had been incautious during that period. All which we can notice is, that this rigorous limitation of provincial issues to a low maximum (and a low maximum was purposely fixed) effectually prevents those local expansions of bank-note circulation, which, as we have shown, *ought* to take place in periods of commercial difficulty. And further, that by transferring all local demands to the Bank of England, as the only place from which extra accommodation can be had, the tendency is to concentrate a pressure which would else be diffused; and so to create panic.

Saying nothing more, however, respecting the impolicy of the measure, let us mark its futility. As a means of preserving the convertibility of the provincial bank-note, it is useless unless it acts as some safeguard against bank-failures; and that it does not do this is demonstrable. While it diminishes the likelihood of failures caused by over-issue of notes, it increases the likelihood of failures from other causes. For what will be done by a provincial banker whose issues are restricted by the Act of 1844, to a level lower than that to which he would otherwise have let them rise? If he would, but for the law, have issued more notes than he now does—if his reserve is greater than, in his judgment, is needful for the security of his notes; is it not clear that he will simply extend his operations in other directions? Will not the excess of his available capital, be to him a warrant



either for entering into larger speculations himself, or for allowing his customers to draw on him beyond the limit he would else have fixed? If, in the absence of restriction, his rashness would have led him to risk bankruptcy by over-issue, will it not now equally lead him to risk bankruptcy by over-banking? And is not the one kind of bankruptcy as fatal to the convertibility of notes as the other?

Nay, the case is even worse. There is reason to believe that bankers are tempted into greater dangers under this protective system. They can and will hypothecate their capital in ways less direct than by notes; and may very likely be led, by the unobtrusiveness of the process, to commit themselves more than they would else do. A trader, applying to his banker in times of commercial difficulty, will often be met by the reply—"I cannot make you any direct advances, having already loaned as much as I can spare; but knowing you to be a safe man, I will lend you my name. Here is my acceptance for the sum you require: they will discount it for you in London." Now, as loans thus made do not entail the same immediate responsibilities as when made in notes (seeing that they are neither at once payable, nor do they add to the dangers of a possible run), a banker is under a temptation to extend his liabilities in this way much further than he would have done, had not law forced him to discover a new channel through which to give credit.

And does not the evidence that has lately transpired go to show that these roundabout ways of giving credit *do* take the place of the interdicted ways; and that they *are* more dangerous than the interdicted ways? Is it not notorious that dangerous forms of paper-currency have had an unexampled development since the Act of 1844? Do not the newspapers and the debates give daily proofs of this? And is not the process of causation obvious?

Indeed, it might have been known, *à priori*, that such a result was sure to take place. It has been shown conclusively that, when uninterfered with, the amount of note-cir-

ulation at any given time, is determined by the amount of trade going on—the quantity of payments that are being made. It has been repeatedly testified before committee, that when any local banker contracts his issues, he simply causes an equivalent increase in the issues of neighbouring bankers. And in past times it has been more than once complained, that when from prudential motives the Bank of England withdrew part of its notes, the provincial bankers immediately multiplied their notes to a proportionate extent. Well, is it not manifest that this inverse variation, which holds between one class of bank-notes and another, also holds between bank-notes and other forms of paper-currency? Will it not happen that just as diminishing the note-circulation of one bank, merely adds to the note-circulation of other banks; so, an artificial restriction on the circulation of bank-notes in general, will simply cause an increased circulation of some substituted kind of promise-to-pay? And is not this substituted kind, in virtue of its novelty and irregularity, likely to be a more unsafe kind? See, then, the predicament. Over all the bills of exchange, cheques, etc., which constitute nine-tenths of the paper-currency of the kingdom, the State exercises, and can exercise, no control. And the limit it puts on the remaining tenth, vitiates the other nine-tenths, by causing an abnormal growth of new forms of credit, which experience proves to be especially dangerous.

Thus, all which the State does when it exceeds its true duty, is to hinder, to disturb, to corrupt. As already pointed out, the quantity of credit men will give each other, is determined by natural causes, moral and physical—their average characters, their temporary states of feeling, their circumstances. If the Government forbids one mode of giving credit, they will find another, and probably a worse. Be the degree of mutual trust prudent or imprudent, it must take its course. The attempt to restrict it by law, is nothing but a repetition of the old story of keeping out the sea with a fork.

And now mark, that were it not for these worse than

futile State-safeguards, there might grow up certain natural safeguards, which would really put a check on undue credit and abnormal speculation. Were it not for the attempts to insure security by law, it is very possible that, under our high-pressure system of business, banks would compete with each other in respect of the degree of security they offered—would endeavour to outdo each other in the obtainment of a legitimate public confidence. Consider the position of a new joint-stock-bank with limited liability, and unchecked by legal regulations. It can do nothing until it has gained the general good opinion. In the way of this there stand great difficulties. Its constitution is untried; and is sure to be looked upon by the trading world with considerable distrust. The field is already occupied by old banks with established connexions. Out of a constituency satisfied with the present accommodation, it has to obtain supporters for a system that is apparently less safe than the old. How shall it do this? Evidently it must find some unusual mode of assuring the community of its trustworthiness. And out of a number of new banks so circumstanced, it is not too much to suppose that ultimately one would hit on some mode. It might be, for instance, that such a bank would give to all who held deposits over £1000 the liberty of inspecting its books—of ascertaining from time to time its liabilities and its investments. Already this plan is frequently adopted by private traders, as a means of assuring those who lend money to them; and this extension of it might naturally take place under the pressure of competition. We have put the question to a gentleman who has had long and successful experience, as manager of a joint-stock-bank; and his reply is, that some such course would very probably be adopted: adding that, under this arrangement, a depositor would practically become a partner with limited liability.

Were a system of this kind to establish itself, it would form a double check to unhealthy trading. Consciousness that its rashness would become known to its chief clients,

would prevent the bank-management from being rash ; and consciousness that his credit would be damaged when his large debt to the bank was whispered, would prevent the speculator from contracting so large a debt. Both lender and borrower would be restrained from reckless enterprize. Very little inspection would suffice to effect this end. One or two cautious depositors would be enough ; seeing that the mere expectation of immediate disclosure, in case of misconduct, would mostly keep in order all those concerned.

Should it however be contended, as by some it may, that this safeguard would be of no avail—should it be alleged that, having in their own hands the means of safety, citizens would not use them, but would still put blind faith in directors, and give unlimited trust to respectable names ; then we reply that they would deserve whatever bad consequences fell on them. If they did not take advantage of the proffered guarantee, the penalty be on their own heads. We have no patience with the mawkish philanthropy which would ward-off the punishment of stupidity. The ultimate result of shielding men from the effects of folly, is to fill the world with fools.

A few words in conclusion respecting the attitude of our opponents. Leaving joint-stock-bank legislation, on which the eyes of the public are happily becoming opened ; and returning to the Bank-Charter, with its theory of currency-regulation ; we have to charge its supporters with gross, if not wilful, misrepresentation. Their established policy is to speak of all antagonism as identified with adhesion to the vulgarest fallacies. They daily present, as the only alternatives, their own dogma or some wild doctrine too absurd to be argued. “Side with us or choose anarchy,” is the substance of their homilies.

To speak specifically :—They boldly assert, in the first place, that they are the upholders of “principle ;” and on all opposition they seek to fasten the title of “empiricism.”

Now, we are at a loss to see what there is "empirical" in the position, that a bank-note-circulation will regulate itself in the same way that the circulation of other paper-currency does. It seems to us anything but "empirical," to say that the natural check of prospective bankruptcy, which restrains the trader from issuing too many promises-to-pay at given dates, will similarly restrain the banker from issuing too many promises-to-pay on demand. We take him to be the opposite of an "empiric," who holds that people's characters and circumstances determine the quantity of credit-memoranda in circulation; and that the monetary disorders which their imperfect characters and changing circumstances occasionally entail, can be exacerbated, but cannot be prevented, by State-nostrums. On the other hand, we do not see in virtue of what "principle" it is, that the contract expressed on the face of a bank-note must be dealt with differently from any other contract. We cannot understand the "principle" which requires the State to control the business of bankers, so that they may not make engagements they cannot fulfil; but which does *not* require the State to do the like with other traders. To us it is a very incomprehensible "principle" which permits the Bank of England to issue £14,000,000 on the credit of the State; but which is broken if the State-credit is mortgaged beyond this—a "principle" which implies that £14,000,000 of notes may be issued without gold to meet them, but insists on rigorous precautions for the convertibility of every pound more. We are curious to learn how it was inferred from this "principle" that the average note-circulation of each provincial bank, during certain twelve weeks in 1844, was exactly the note-circulation which its capital justified. So far from discerning a "principle," it seems to us that both the idea and its applications are as empirical as they can well be.

Still more astounding, however, is the assumption of these "currency-theorists," that their doctrines are those of Free-trade. In the Legislature, Lord Overstone, and in the press,

the *Saturday Review*, have, among others, asserted this. To call that a Free-trade measure, which has the avowed object of restricting certain voluntary acts of exchange, appears so manifest a contradiction in terms, that it is scarcely credible it should be made. The whole system of currency-legislation is restrictionist from beginning to end: equally in spirit and detail. Is that a Free-trade regulation which has all along forbidden banks of issue within sixty-five miles of London? Is that Free-trade which enacts that none but such as have now the State-warrant, shall henceforth give promises-to-pay on demand? Is that Free-trade which at a certain point steps in between the banker and his customer, and puts a veto on any further exchange of credit-documents? We wonder what would be said by two merchants, the one about to draw a bill on the other in return for goods sold, who should be stopped by a State-officer with the remark that, having examined the buyer's ledger, he was of opinion that ready as the seller might be to take the bill, it would be unsafe for him to do so; and that the law, in pursuance of the principles of Free-trade, negatived the transaction! Yet for the promise-to-pay in six months, it needs but to substitute a promise-to-pay on demand, and the case becomes substantially that of banker and customer.

It is true that the "currency-theorists" have a colourable excuse in the fact, that among their opponents are the advocates of various visionary schemes, and propounders of regulations quite as protectionist in spirit as their own. It is true that there are some who contend for inconvertible "labour-notes;" and others who argue that in times of commercial pressure, banks should not raise their rates of discount. But is this any justification for recklessly stigmatizing all antagonism as coming from these classes; in the face of the fact that the Bank-Act has been protested against by the highest authorities in political economy? Do not the defenders of the "currency-principle" know, that among their opponents are Mr. Thornton, long known as an able

writer on currency-questions ; Mr. Tooke and Mr. Newmarch, famed for their laborious and exhaustive researches respecting currency and prices ; Mr. Fullarton, whose "Regulation of Currencies" is a standard work ; Mr. Macleod, whose just-issued book displays the endless injustices and stupidities of our monetary history ; Mr. James Wilson, M.P., who, in detailed knowledge of commerce, currency, and banking, is probably unrivalled ; and Mr. John Stuart Mill, who both as logician and economist, stands in the first rank ? Do they not know that the alleged distinction between bank-notes and other credit-documents, which forms the professed basis of the Bank-Act (and for which Sir R. Peel could quote only the one poor authority of Lord Liverpool) is denied, not only by the gentlemen above named, but also by Mr. Huskisson, Professor Storch, Dr. Travers Twiss, and the distinguished French Professors, M. Joseph Garnier and M. Michel Chevalier ?<sup>1</sup> Do they not know, in short, that both the profoundest thinkers and the most patient inquirers are against them ? If they do not know this, it is time they studied the subject on which they write with such an air of authority. If they do know it, a little more respect for their opponents would not be unbecoming.

<sup>1</sup> See Mr. Tooke's "Bank Charter Act of 1844," etc.

## THE MORALS OF TRADE.

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WE are not about to repeat, under the above title, the oft-told tale of adulterations: albeit, were it our object to deal with this familiar topic, there are not wanting fresh materials. It is rather the less-observed and less-known dishonesties of trade, to which we would here draw attention. The same lack of conscientiousness which shows itself in the mixing of starch with cocoa, in the dilution of butter with lard, in the colouring of confectionary with chromate of lead and arsenite of copper, must of course come out in more concealed forms; and these are nearly, if not quite, as numerous and as mischievous.

It is not true, as many suppose, that only the lower classes of the commercial world are guilty of fraudulent dealing: those above them are to a great extent blameworthy. On the average, men who deal in bales and tons differ but little in morality from men who deal in yards and pounds. Illicit practices of every form and shade, from venial deception up to all but direct theft, may be brought home to the higher grades of our commercial world. Tricks innumerable, lies acted or uttered, elaborately-devised frauds, are prevalent—many of them established as “customs of the trade;” nay, not only established, but defended.

Passing over, then, the much-reprobated shopkeepers, of whose delinquencies most people know something, let us turn our attention to the delinquencies of the classes above them in the mercantile scale.

The business of wholesale houses—in the clothing-trades at



least—is chiefly managed by a class of men called “buyers.” Each wholesale establishment is usually divided into several departments; and at the head of each of these departments is placed one of these functionaries. A buyer is a partially-independent sub-trader. At the beginning of the year he is debited with a certain share of the capital of his employers. With this capital he trades. From the makers he orders for his department such goods as he thinks will find a market; and for the goods thus bought he obtains as large a sale as he can among the retailers of his connexion. The accounts show at the end of the year, what profit has been made on the capital over which he has command; and according to the result, his engagement is continued, perhaps at an increased salary, or he is discharged.

Under such circumstances, bribery would hardly be expected. Yet we learn, on unquestionable authority, that buyers habitually bribe and are bribed. Giving presents, as a means of obtaining custom, is an established and understood practice between them and all with whom they have dealings. Their connexion among retailers they extend by treating and favours; and they are themselves influenced in their purchases by like means. It might be presumed that self-interest would in both cases negative this. But apparently, no very obvious sacrifice results from yielding to such influences. When, as usually happens, there are many manufacturers producing articles of like goodness at the same prices, or many buyers between whose commodities and whose terms there is little room for choice; there exists no motive to purchase of one rather than another; and then, the temptation to take some immediate bonus turns the scale. Whatever be the cause, however, the fact is testified to us alike in London and the provinces. By manufacturers, buyers are sumptuously entertained for days together, and are plied throughout the year with hampers of game, turkeys, dozens of wine, etc.; nay, they receive actual money-bribes: sometimes, as we hear from a manufacturer, in the shape of

bank-notes ; but more commonly in the shape of discounts on the amounts of their purchases. The extreme prevalence—universality we might say—of this system, is proved by the evidence of one who, disgusted as he is, finds himself inextricably entangled in it. He confessed to us that all his transactions were thus tainted. “Each of the buyers with whom I deal,” he said, “expects an occasional bonus in one form or other. Some require the bribe to be wrapped up ; and some take it without disguise. To an offer of money, such an one replies—‘Oh, I don’t like that sort of thing ;’ but nevertheless, he does not object to money’s-worth. While my friend So-and-so, who promises to bring me a large trade this season, will, I very well know, look for one per cent. discount in cash. The thing is not to be avoided. I could name sundry buyers who look askance at me, and never will inspect my goods ; and I have no doubt about the cause—I have not bought their patronage.” And then our informant appealed to another of the trade, who agreed in the assertion that in London, their business could not be done on any other terms. To such an extent is the system carried, and so greedy of perquisites do some of these buyers become, as to absorb a great part of the profits ; and to make it a question whether it is worth while to continue the connexion. And then, as above hinted, there comes a like history of transactions between buyers and retailers—the bribed being now the briber. One of those above referred to as habitually expecting douceurs, said to the giver of them, whose testimony we have just repeated—“I’ve spent pounds and pounds over —— (naming a large tailor), and now I think I have gained him over.” To which confession this buyer added the complaint, that his house did not make him any allowance for sums thus disbursed.

Under the buyer, who has absolute control of his own department in a wholesale house, come a number of assistants, who transact the business with retail traders : much as retail trader’s assistants transact the business with the general

public. These higher-class assistants, working under the same pressure as the lower, are similarly unscrupulous. Liable to prompt dismissal as they are for non-success in selling; gaining higher positions as they do in proportion to the quantities of goods they dispose of at profitable rates; and finding that no objections are made to any dishonest artifices they use, but rather that they are applauded for them; these young men display a scarcely credible demoralization. As we learn from those who have been of them, their duplicity is unceasing—they speak almost continuous falsehood; and their tricks range from the simplest to the most Machiavellian. Take a few samples. When dealing with a retailer, it is an habitual practice to bear in mind the character of his business; and to delude him respecting articles of which he has least experience. If his shop is in a neighbourhood where the sales are chiefly of inferior goods (a fact ascertained from the traveller), it is inferred that, having a comparatively small demand for superior goods, he is a bad judge of them; and advantage is taken of his ignorance. Again, it is usual purposely to present samples of cloths, silks, etc., in such order as to disqualify the perceptions. As when tasting different foods or wines, the palate is disabled by something strongly flavoured, from appreciating the more delicate flavour of another thing afterwards taken; so with the other organs of sense, a temporary disability follows an excessive stimulation. This holds not only with the eyes in judging of colours, but also, as we are told by one who has been in the trade, it holds with the fingers in judging of textures; and cunning salesmen are in the habit of thus partially paralysing the customers' perceptions, and then selling second-rate articles as first-rate ones. Another common manœuvre is that of raising a false belief of cheapness. Suppose a tailor is laying in a stock of broad cloths. He is offered a bargain. Three pieces are put before him—two of good quality, at, perhaps, 14s per yard; and one of much inferior quality, at 8s. per yard. These pieces have been purposely a little tumbled and

creased, to give an apparent reason for a pretended sacrifice upon them. And the tailor is then told that he may have these nominally-damaged cloths as "a job lot," at 12s. per yard. Misled by the appearances into a belief of the professed sacrifice; impressed, moreover, by the fact that two of the pieces are really worth considerably more than the price asked; and not sufficiently bearing in mind that the great inferiority of the third just balances this; the tailor probably buys: and he goes away with the comfortable conviction that he has made a specially-advantageous purchase, when he has really paid the full price for every yard. A still more subtle trick has been described to us by one who himself made use of it, when engaged in one of these wholesale-houses—a trick so successful, that he was often sent for to sell to customers who could be induced to buy by none other of the assistants, and who ever afterwards would buy only of him. His policy was to seem extremely simple and honest, and during the first few purchases to exhibit his honesty by pointing out defects in the things he was selling; and then, having gained the customer's confidence, he proceeded to pass off upon him inferior goods at superior prices. These are a few out of the various manœuvres in constant practice. Of course there is a running accompaniment of falsehoods, uttered as well as acted. It is expected of the assistant that he will say whatever is needed to effect a sale. "Any fool can sell what is wanted," said a master in reproaching a shopman for not having persuaded a customer to buy something quite unlike that which he asked for. And the unscrupulous mendacity thus required by employers, and encouraged by example, grows to a height of depravity that has been described to us in words too strong to be repeated. Our informant was obliged to relinquish his position in one of these establishments, because he could not lower himself to the required depth of degradation. "You don't lie as though you believe what you say," observed one of his fellow-assistants. And this was uttered as a reproach!

As those subordinates who have fewest qualms of conscience are those who succeed the best, are soonest promoted to more remunerative posts, and have therefore the greatest chances of establishing businesses of their own; it may be inferred that the morality of the heads of these establishments, is much on a par with that of their *employés*. The habitual mal-practices of wholesale-houses, confirm this inference. Not only, as we have just seen, are assistants under a pressure impelling them to deceive purchasers respecting the qualities of the goods they buy, but purchasers are also deceived in respect to the quantities; and that, not by an occasional unauthorized trick, but by an organized system, for which the firm itself is responsible. The general, and indeed almost universal practice, is, to make up goods, or to have them made up, in lengths that are shorter than they profess to be. A piece of calico nominally thirty-six yards long, never measures more than thirty-one yards—is understood throughout the trade to measure only this. And the long-accumulating delinquencies which this custom indicates—the successive diminutions of length, each introduced by some adept in dishonesty, and then imitated by his competitors—are now being daily carried to a still greater extent, wherever they are not likely to be immediately detected. Articles that are sold in small bundles, knots, packets, or such forms as negative measurement at the time of sale, are habitually deficient in quantity. Silk-laces called six quarters, or fifty-four inches, really measure four quarters, or thirty-six inches. Tapes were originally sold in grosses containing twelve knots of twelve yards each; but these twelve-yard-knots are now cut of all lengths, from eight yards down to five yards, and even less—the usual length being six yards. That is to say, the 144 yards which the gross once contained, has now in some cases dwindled down to 60 yards. In widths, as well as in lengths, this deception is practised. French cotton-braid, for instance (French only in name), is made of different widths; which are respectively marked 5, 7, 9, 11, etc.: each figure

indicating the number of threads of cotton which the width includes, or rather should include, but does not. For those which should be marked 5 are marked 7; and those which should be marked 7 are marked 9: out of three samples from different houses shown to us by our informant, only one contained the alleged number of threads. Fringe, again, which is sold wrapped on card, will often be found two inches wide at the end exposed to view, but will diminish to one inch at the end next the card; or perhaps the first twenty yards will be good, and all the rest, hidden under it, will be bad. These frauds are committed unblushingly, and as a matter of business. We have ourselves read in an agent's order-book, the details of an order, specifying the actual lengths of which the articles were to be cut, and the much greater lengths to be marked on the labels. And we have been told by a manufacturer who was required to make up tapes into lengths of fifteen yards, and label them as "warranted 18 yards," that when he did not label them falsely, his goods were sent back to him; and that the greatest concession he could obtain, was to be allowed to send them without labels.

It is not to be supposed that in their dealings with manufacturers, these wholesale-houses adopt a code of morals differing much from that which regulates their dealings with retailers. The facts prove it to be much the same. A buyer for instance (who exclusively conducts the purchases of a wholesale-house from manufacturers) will not unfrequently take from a first-class maker, a small supply of some new fabric, on the pattern of which much time and money have been spent; and this new-pattern fabric he will put into the hands of another maker, to have copied in large quantities. Some buyers, again, give their orders verbally, that they may have the opportunity of afterwards repudiating them if they wish; and in a case narrated to us, where a manufacturer who had been thus deluded, wished on a subsequent occasion to guarantee himself by obtaining the buyer's signature to his order, he was refused it. For other unjust acts of whole-

sale-houses, the heads of these establishments are, we presume, responsible. Small manufacturers working with insufficient capital, and in times of depression not having the wherewith to meet their engagements, are often obliged to become dependants on the wholesale-houses with which they deal; and are then cruelly taken advantage of. One who has thus committed himself, has either to sell his accumulated stock at a great sacrifice—thirty to forty per cent. below its value—or else to mortgage it; and when the wholesale-house becomes the mortgagee, the manufacturer has little chance of escape. He is obliged to work at the wholesaler's terms; and ruin almost certainly follows. This is especially the case in the silk-hosiery business. As was said to us by one of the larger silk-hosiers, who had watched the destruction of many of his smaller brethren—"They may be spared for a while as a cat spares a mouse; but they are sure to be eaten up in the end." And we can the more readily credit this statement, from having found that a like policy is pursued by some provincial curriers in their dealings with small shoe-makers; and also by hop-merchants and maltsters in their dealings with small publicans. We read that in Hindostan, the ryots, when crops fall short, borrow from the Jews to buy seed; and once in their clutches are doomed. It seems that our commercial world can furnish parallels.

Of another class of wholesale-traders—those who supply grocers with foreign and colonial produce—we may say that though, in consequence of the nature of their business, their mal-practices are less numerous and multiform, as well as less glaring, they are of much the same stamp as the foregoing. Unless it is to be supposed that sugar and spices are moral antiseptics as well as physical ones, it must be expected that wholesale dealers in them will transgress much as other wholesale dealers do, in those directions where the facilities are greatest. And the truth is, that both in the qualities and quantities of the articles they sell, they take advantage of the retailers. The descriptions they give of their com-

modities are habitually misrepresentations. Samples sent round to their customers are characterized as first-rate when they are really second-rate. The travellers are expected to endorse these untrue statements. And unless the grocer has adequate keenness and extensive knowledge, he is more or less deceived. In some cases, indeed, no skill will save him. There are frauds that have grown up little by little into customs of the trade, which the retailer must submit to. In the purchase of sugar, for example, he is imposed on in respect alike of the goodness and the weight. The history of the dishonesty is this. Originally the tare allowed by the merchant on each hogshead, was 14 per cent. of the gross weight. The actual weight of the wood of which the hogshead was made, was at that time about 12 per cent. of the gross weight. And thus the trade allowance left a profit of 2 per cent. to the buyer. Gradually, however, the hogshead has grown thicker and heavier; until now, instead of amounting to 12 per cent. of the gross weight, it amounts to 17 per cent. And as the allowance of 14 per cent. still continues, the result is that the retail grocer loses 3 per cent.: to the extent of 3 per cent. he buys wood in place of sugar. In the quality of the sugar, he is deluded by the practice of giving him a sample only from the best part of the hogshead. During its voyage from Jamaica or elsewhere, the contents of a hogshead undergo a certain slow drainage. The molasses, of which more or less is always present, filters from the uppermost part of the mass of sugar to the lowermost part; and this lowermost part, technically known as the "foot," is of darker colour and smaller value. The quantity of it contained in a hogshead, varies greatly; and the retailer, receiving a false sample, has to guess what the quantity of "foot" may be; and to his cost often under-estimates it. As will be seen from the following letter, copied from the *Public Ledger* for the 20th Oct., 1858, these grievances, more severe even than we have represented them, are now exciting an agitation.



*“To the Retail Grocers of the United Kingdom.*

“Gentlemen,—The time has arrived for the trade at once to make a move for the revision of tares on all raw sugars. Facts prove the evil of the present system to be greatly on the increase. We submit a case as under, and only one out of twenty. On the 30th August, 1858, we bought 3 hogsheads of Barbados, mark TG  
K

Invoice Tares.				Re Tares.				
No.	cwt.	qrs.	lb.	No.	cwt.	qrs.	lb.	
1 . . .	1	2	14	6 drift.	1 . .	1	3	27
7 . . .	1	2	7		7 . .	1	3	20
3 . . .	1	2	21		3 . .	1	3	27
	4					5		
	3	20			3	18		
			Deduct . . . . .	4	3	20		
					0			
					3	26	at 42	— 2 1 3
							s.	£ s. d.

“We make a claim for £2 1s. 3d.; we are told by the wholesale grocer there is no redress.

“There is another evil which the retail grocer has to contend with, that is, the mode of sampling raw sugar: the foots are excluded from the merchants’ samples. Facts will prove that in thousands of hogsheads of Barbados this season there is an average of 5 cwt. of foots in each; we have turned out some with 10 cwt., which are at least 5s. per cwt. less value than sample, and in these cases we are told again there is no redress.

“These two causes are bringing hundreds of hard-working men to ruin, and will bring hundreds more unless the trade take it up, and we implore them to unite in obtaining so important a revision.

“We are, Gentlemen, your obedient servants,

“WALKER and STAINES.\*

“Birmingham, October 19, 1858.”

A more subtle method of imposition remains to be added. It is the practice of sugar-refiners to put moist, crushed sugar into dried casks. During the time that elapses before one of these casks is opened by the retailer, the desiccated wood has taken up the excess of water from the sugar; which is so brought again into good condition. When the retailer, however, finding that the cask weighs much more than was allowed as tare by the wholesale dealer, complains to him of this excess,

\* The abuses described in this letter have now, we believe, been abolished.

the reply is—"Send it up to us, and we will *dry it* and weigh it, as is the custom of the trade."

Without further detailing these mal-practices, of which the above examples are perhaps the worst, we will advert only to one other point in the transactions of these large houses—the drawing-up of trade-circulars. It is the practice of many wholesalers to send round to their customers, periodic accounts of the past transactions, present condition, and prospects of the markets. Serving as checks on each other, as they do, these documents are prevented from swerving very widely from the truth. But it is scarcely to be expected that they should be quite honest. Those who issue them, being in most cases interested in the prices of the commodities referred to in their circulars, are swayed by their interests in the representations they make respecting the probabilities of the future. Far-seeing retailers are on their guard against this. A large provincial grocer, who thoroughly understands his business, said to us—"As a rule, I throw trade-circulars on the fire." And that this estimate of their trustworthiness is not unwarranted, we gather from the expressions of those engaged in other businesses. From two leather-dealers, one in the country and one in London, we have heard the same complaint against the circulars published by houses in their trade, that they are misleading. Not that they state untruths; but that they produce false impressions by leaving out facts which they should have stated.

In illustrating the morality of manufacturers, we shall confine ourselves to one class—those who work in silk. And it will be the most convenient method of arranging facts, to follow the silk through its various stages; from its state when imported, to its state when ready for the wearer.

Bundles of raw silk from abroad—not uncommonly weighted with rubbish, stones, or rouleaux of Chinese copper coin, to the loss of the buyer—are disposed of by auction. Purchases are made on behalf of the silk-dealers by "sworn brokers;" and

the regulation is, that these sworn brokers shall confine themselves solely to their functions as agents. From a silk-manufacturer, however, we learn that they are currently understood to be themselves speculators in silk, either directly or by proxy; and that as thus personally interested in prices, they become faulty as agents. We give this, however, simply as a prevailing opinion; for the truth of which we do not vouch.

The silk bought by the London dealer, he sends into the manufacturing districts to be "thrown;" that is—to be made into thread fit for weaving. In the established form of bargain between the silk-dealer and the silk-throwster, we have a strange instance of an organized and recognized deception; which has seemingly grown out of a check on a previous deception. The throwing of silk is necessarily accompanied by some waste; from broken ends, knots, and fibres too weak to wind. This waste varies in different kinds of silk from 3 per cent. to 20 per cent.: the average being about 5 per cent. The per-centage of waste being thus variable, it is obvious that in the absence of restraint, a dishonest silk-throwster might abstract a portion of the silk; and on returning the rest to the dealer, might plead that the great diminution in the weight had resulted from the large amount of loss in the process of throwing. Hence there has arisen a system, called "working on cost," which requires the throwster to send back to the dealer the same weight of silk which he receives: the meaning of the phrase being, we presume, that whatever waste the throwster makes must be at his own cost. Now, as it is impossible to throw silk without *some* waste—at least 3 per cent., and ordinarily 5 per cent.—this arrangement necessitates a deception; if, indeed, that can be called a deception which is tacitly understood by all concerned. The silk has to be weighted. As much as is lost in throwing, has to be made up by some foreign substance introduced. Soap is largely used for this. In small quantity, soap is requisite to facilitate the running of the threads in the process of manufacture; and the quantity is readily increased.

Sugar also is used. And by one means or other, the threads are made to absorb enough matter to produce the desired weight. To this system all silk-throwsters are obliged to succumb; and some of them carry it to a great extent, as a means of hiding either carelessness or something worse.

The next stage through which silk passes, is that of dyeing. Here, too, impositions have grown chronic and general. In times past, as we learn from a ribbon-manufacturer, the weighting by water was the chief dishonesty. Bundles returned from the dyer's, if not manifestly damp, still, containing moisture enough to make up for a portion of the silk that had been kept back. And precautions had to be taken to escape losses thus entailed. Since then, however, there has arisen a method of deception which leaves this far behind—that of employing heavy dyes. The following details have been given us by a silk-throwster. It is now, he says, some five-and-thirty years since this method was commenced. Before that time, silk lost a considerable part of its weight in the copper. It appears that the ultimate fibre of silk is coated, in issuing from the spinneret of the silk-worm, with a film of varnish that is soluble in boiling water. In dyeing, therefore, this film, amounting to 25 per cent. of the entire weight of the silk, is dissolved off; and the silk is rendered that much lighter. So that originally, for every sixteen ounces of silk sent to the dyer's, only twelve ounces were returned. Gradually, however, by the use of heavy dyes, this result has been reversed. The silk now gains in weight; and sometimes to a scarcely credible extent. According to the requirement, silk is sent back from the dyer's of any weight from twelve ounces to the pound, up to forty ounces to the pound. The original pound of silk, instead of losing four ounces, as it naturally would, is actually, when certain black dyes are used, made to gain as much as twenty-four ounces! Instead of 25 per cent. lighter, it is returned 150 per cent. heavier—is weighted with 175 per cent. of foreign matter! Now as, during this stage of its manufacture, the transactions in silk

are carried on by weight ; it is manifest that in the introduction and development of this system, we have a long history of frauds. At present all in the trade are aware of it, and on their guard against it. Like other modes of adulteration, in becoming established and universal, it has ceased to be profitable to any one. But it still serves to indicate the morals of those concerned.

The thrown and dyed silk passes into the hands of the weaver ; and here again we come upon dishonesties. Manufacturers of figured silks, sin against their fellows by stealing their patterns. The laws that have been found necessary to prevent this species of piracy, show that it has been carried to a great extent. Even now it is not prevented. One who has himself suffered from it, tells us that manufacturers still get each other's designs by bribing the workmen. In their dealings with "buyers," too, some manufacturers resort to deceptions : perhaps tempted to do so by the desire to compensate themselves for the heavy tax paid in treating, etc. Certain goods that have already been seen and declined by other buyers, are brought before a subsequent one with artfully-devised appearances of secrecy ; accompanied by professions that these goods have been specially reserved for his inspection : a manœuvre by which an unwary man is sometimes betrayed. That the process of production has its delusions, scarcely needs saying. In the ribbon-trade, for example, there is a practice called "top-ending ;" that is, making the first three yards good, and the rest (which is covered when rolled up) of bad or loose texture—80 "shutes" to the inch instead of 108. And then there comes the issuing of imitations made of inferior materials—textile adulterations as we may call them. This practice of debasement, not an occasional but an established one, is carried to a surprising extent ; and with surprising rapidity. Some new fabric, first sold at 7*s.* 6*d.* per yard, is supplanted by successive counterfeits ; until at the end of eighteen months a semblance of it is selling at 4*s.* 3*d.* per yard. Nay, still greater deprecia-

tions of quality and price take place—from 10s. down to 3s., and even 2s. per yard. Until at length the badness of these spurious fabrics becomes so conspicuous, that they are unsaleable; and there ensues a reaction, ending either in the re-introduction of the original fabric, or in the production of some novelty to supply its place.

Among our notes of mal-practices in trade, retail, wholesale, and manufacturing, we have many others that must be passed over. We cannot here enlarge on the not uncommon trick of using false trade-marks; or imitating another maker's wrappers; and so deluding purchasers. We must be satisfied with simply referring to the doings of apparently-reputable houses, which purchase goods known to be dishonestly obtained. And we are obliged to refrain from particularizing certain established arrangements, existing under cover of the highest respectability, which seem intended to facilitate these nefarious transactions. The frauds we have detailed are but samples of a state of things which it would take a volume to describe in full.

The further instances of trading-immorality which it seems desirable here to give, are those which carry with them a certain excuse: showing as they do how insensibly, and almost irresistibly, men are thrust into vicious practices. Always, no doubt, some utterly unconscientious trader is the first to introduce a new form of fraud. He is by-and-by followed by others who wear their moral codes but loosely. The more upright traders are continually tempted to adopt this questionable device which those around them are adopting. The greater the number who yield, and the more general and familiar the device becomes, the more difficult is it for the remainder to stand out against it. The pressure of competition upon them, becomes more and more severe. They have to fight an unequal battle: debarred as they are from one of the sources of profit which their antagonists possess. And they are finally almost compelled to follow the lead of the

rest. Take for example what has happened in the candle-trade. As all know, the commoner kinds of candles are sold in bunches, supposed to weigh a pound each. Originally, the nominal weight corresponded with the real weight. But at present the weight is habitually short, by an amount varying from half an ounce to two ounces—is sometimes depreciated  $12\frac{1}{2}$  per cent. If, now, an honest chandler offers to supply a retailer at, say six shillings for the dozen pounds, the answer he receives is—“Oh, we get them for five-and-eightpence.” “But mine,” replies the chandler, “are of full weight; while those you buy at five-and-eightpence are not.” “What does that matter to me?” the retailer rejoins—“a pound of candles is a pound of candles: my customers buy them in the bunch, and won’t know the difference between yours and another’s.” And the honest chandler, being everywhere met with this argument, finds that he must either make his pounds of short weight, or give up business. Take another case, which, like the last, we have direct from the mouth of one who has been obliged to succumb. It is that of a manufacturer of the elastic webbing, now extensively used in making boots, etc. From a London house with which he dealt largely, this manufacturer recently received a sample of webbing produced by some one else, accompanied by the question, “Can you make us this at —— per yard?” (naming a price below that at which he had before supplied them); and hinting that if he could not do so, they must go elsewhere. On pulling to pieces the sample (which he showed to us), this manufacturer found that sundry of the threads which should have been of silk were of cotton. Indicating this fact to those who sent him the sample, he replied that if he made a like substitution, he could furnish the fabric at the price named; and the result was that he eventually did thus furnish it. He saw that if he did not do so, he must lose a considerable share of his trade. He saw further, that if he did not at once yield, he would have to yield in the end; for that other elastic-webbing-makers would one after another

engage to produce this adulterated fabric at correspondingly diminished prices ; and that when at length he stood alone in selling an apparently-similar article at a higher price, his business would leave him. This manufacturer we have the best reasons for knowing to be a man of fine moral nature, both generous and upright ; and yet we here see him obliged, in a sense, to implicate himself in one of these processes of vitiation. It is a startling assertion, but it is none the less a true one, that those who resist these corruptions, often do it at the risk of bankruptcy : sometimes the certainty of bankruptcy. We do not say this simply as a manifest inference from the conditions, as above described. We say it on the warrant of instances that have been given to us. From one brought up in his house, we have had the history of a draper, who, carrying his conscience into his shop, refused to commit the current frauds of the trade. He would not represent his goods as of better quality than they really were ; he would not say that patterns were just out, when they had been issued the previous season ; he would not warrant to wash well, colours which he knew to be fugitive. Refraining from these and the like mal-practices of his competitors ; and, as a consequence, daily failing to sell various articles which his competitors would have sold by force of lying ; his business was so unremunerative that he twice became bankrupt. And in the opinion of our informant, he inflicted more evil upon others by his bankruptcies, than he would have done by committing the usual trade-dishonesties. See, then, how complicated the question becomes ; and how difficult to estimate the trader's criminality. Often—generally indeed—he has to choose between two wrongs. He has tried to carry on his business with strict integrity. He has sold none but genuine articles ; and has given full measure. Others in the same business adulterate or otherwise delude ; and are so able to undersell him. His customers, not adequately appreciating the superiority in the quality or quantity of his goods ; and attracted by the apparent cheapness at other shops ; desert



him. An inspection of his books proves the alarming fact, that his diminishing returns will soon be insufficient to meet his engagements, and provide for his increasing family. What then must he do? Must he continue his present course; stop payment; inflict heavy losses on his creditors; and with his wife and children turn out into the streets? Or must he follow the example of his competitors; use their artifices; and give his customers the same apparent advantages? The last not only seems the least detrimental to himself, but also may be considered the least detrimental to others. Moreover, the like is done by men regarded as respectable. Why should he ruin himself and family in trying to be better than his neighbours? He will do as they do.

Such is the position of the trader; such is the reasoning by which he justifies himself; and it is hard to visit him with anything like harsh condemnation. Of course this statement of his case is by no means universally true. There are businesses in which, competition being less active, the excuse for falling into corrupt practices does not hold; and here, indeed, we find corrupt practices much less prevalent. Many traders, too, have obtained connexions which secure to them adequate returns without descending to small rogueries; and they have no defence if they thus degrade themselves. Moreover, there are the men—commonly not prompted by necessity, but by greed—who introduce these adulterations and petty frauds; and on these should descend unmitigated indignation: both as being themselves criminals without excuse, and as causing criminality in others. Leaving out, however, these comparatively small classes, we think that most traders by whom all the commoner businesses are carried on, must receive a much more qualified censure than they at first sight seem to deserve: forced to give way, as they are, by the alternative of ruin. On all sides we have met with the same conviction, that for those engaged in the ordinary trades, there are but two courses—either to adopt the practices of their competitors, or to give up business. Men in

different occupations and in different places—men naturally conscientious, who manifestly chafed under the degradations they submitted to, have one and all expressed to us the sad belief, that it is impossible to carry on trade with strict rectitude. Their concurrent opinion, independently given by each, is, that the scrupulously honest man must go to the wall.

But that it has been during the past year frequently treated by the daily press, we might here enter at some length on the topic of banking-delinquencies. As it is, we may presume all to be familiar with the facts; and shall limit ourselves to making a few comments.

In the opinion of one whose means of judging have been second to those of few, the directors of joint-stock-banks have rarely been guilty of direct dishonesty. Admitting notorious exceptions, the general fact appears to be, that directors have had no immediate interests in furthering these speculations which have proved so ruinous to depositors and shareholders; but have usually been among the greatest sufferers. Their fault has rather been the less flagitious, though still grave fault, of indifference to their responsibilities. Often with very inadequate knowledge, they have undertaken to trade with a vast amount of property belonging in great part to needy people. Instead of using as much care in the investment of this property as though it were their own, many of them have shown culpable recklessness: either themselves loaning capital without adequate guarantee, or else passively allowing their colleagues to do this. Sundry excuses may doubtless be made for them. The well-known defects of a corporate conscience, caused by divided responsibility, must be remembered in mitigation. And it may also be pleaded for such delinquents, that if shareholders, swayed by reverence for mere wealth and position, choose as directors, not the most intelligent, the most experienced, and those of longest-tried probity, but those of largest capital or highest rank, the

blame must not be cast solely on the men so chosen ; but must be shared by the men who choose them : and further, must fall on the public as well as on shareholders ; seeing that this unwise selection of directors is in part determined by the known bias of depositors. But after all allowances have been made, it must be admitted that these bank-administrators who risk the property of their clients by loaning it to speculators, are near akin in morality to the speculators themselves. As these speculators risk other men's money in undertakings which they hope will be profitable ; so do the directors who lend them the money. If these last plead that the money thus lent, is lent with the belief that it will be repaid with good interest ; the first may similarly plead that they expected their investment to return the borrowed capital along with a handsome profit. In each case the transaction is one of which the evil consequences, if they come, fall more largely on others than on the actors. And though it may be contended, on behalf of the director, that what he does is done chiefly for the benefit of his constituents, whereas the speculator has in view only his own benefit ; it may be replied that the director's blameworthiness is not the less because he took a rash step with a comparatively weak motive. The truth is, that when a bank-director lends the capital of shareholders to those to whom he would not lend his own capital, he is guilty of a breach of trust. In tracing the gradations of crime, we pass from direct robbery to robbery one, two, three, or more degrees removed. Though a man who speculates with other people's money, is not chargeable with direct robbery, he is chargeable with robbery one degree removed : he deliberately stakes his neighbour's property, intending to appropriate the gain, if any, and to let his neighbour suffer the loss, if any : his crime is that of contingent robbery. And hence any one who, standing like a bank-director in the position of trustee, puts the money with which he is entrusted into a speculator's hands, must be called an accessory to contingent robbery.

If so grave a condemnation is to be passed on those who lend trust-money to speculators, as well as on the speculators who borrow it, what shall we say of the still more delinquent class who obtain loans by fraud—who not only pawn other men's property when obtained, but obtain it under false pretences? For how else than thus must we describe the doings of those who raise money by accommodation-bills? When A and B agree, the one to draw and the other to accept a bill of £1000 for "value received;" while in truth there has been no sale of goods between them, or no value received; the transaction is not simply an embodied lie, but it becomes thereafter a living and active lie. Whoever discounts the bill, does so in the belief that B, having become possessed of £1000 worth of goods, will, when the bill falls due, have either the £1000 worth of goods or some equivalent, with which to meet it. Did he know that there were no such goods in the hands of either A or B, and no other property available for liquidating the bill, he would not discount it—he would not lend money to a man of straw without security. The case is intrinsically the same as though A had taken to the bank a forged mortgage-deed, and obtained a loan upon it. Practically, an accommodation-bill is a forgery. It is an error to suppose that forgery is limited to the production of documents that are *physically* false—that contain signatures or other symbols which are not what they appear to be: forgery, properly understood, equally includes the production of documents that are *morally* false. What constitutes the crime committed in forging a bank-note? Not the mere mechanical imitation. This is but a means to the end; and, taken alone, is no crime at all. The crime consists in deluding others into the acceptance of what seems to be a representative of so much money, but which actually represents nothing. It matters not whether the delusion is effected by copying the forms of the letters and figures, as in a forged bank-note, or by copying the form of expression, as in an accommodation-bill. In either case a semblance of value is

given to that which has no value ; and it is in giving this false appearance of value that the crime consists. It is true that generally, the acceptor of an accommodation-bill hopes to be able to meet it when due. But if those who think this exonerates him, will remember the many cases in which, by the use of forged documents, men have obtained possession of moneys which they hoped presently to replace, and were nevertheless judged guilty of forgery ; they will see that the plea is insufficient. We contend, then, that the manufacturers of accommodation-bills should be classed as forgers. Whether, if the law so classed them, much good would result, we are not prepared to say. Several questions present themselves :—Whether such a change would cause inconvenience, by negating the many harmless transactions carried on under this fictitious form by solvent men ? Whether making it penal to use the words “value received,” unless there *had* been valued received, would not simply originate an additional class of bills in which these words were omitted ? Whether it would be an advantage if bills bore on their faces, proofs that they did or did not represent actual sales ? Whether a restraint on undue credit would not result, when bankers and discounters saw that certain bills coming to them in the names of speculative or unsubstantial traders, were avowed accommodation bills ? But these are questions we need not go out of our way to discuss. We are here concerned only with the morality of the question.

Duly to estimate the greatness of the evils indicated, however, we must bear in mind both that the fraudulent transactions thus entered into are numerous, and that each generally becomes the cause of many others. The original lie is commonly the parent of further lies, which again give rise to an increasing progeny ; and so on for successive generations, multiplying as they descend. When A and B find their £1000 bill about to fall due, and the expected proceeds of their speculation not forthcoming—when they find, as they often do, either that the investment has resulted in a loss

instead of a gain ; or that the time for realizing their hoped-for profits, has not yet come ; or that the profits, if there are any, do not cover the extravagances of living which, in the meantime, they have sanguinely indulged in—when, in short, they find that the bill cannot be taken up ; they resort to the expedient of manufacturing other bills with which to liquidate the first. And while they are about it, they usually think it will be as well to raise a somewhat larger sum than is required to meet their out-standing engagements. Unless it happens that great success enables them to redeem themselves, this proceeding is repeated, and again repeated. So long as there is no monetary crisis, it continues easy thus to keep afloat ; and, indeed, the appearance of prosperity which is given by an extended circulation of bills in their names, bearing respectable indorsements, creates a confidence in them which renders the obtainment of credit easier than at first. And where, as in some cases, this process is carried to the extent of employing men in different towns throughout the kingdom, and even in distant parts of the world, to accept bills ; the appearances are still better kept up, and the bubble reaches a still greater development. As, however, all these transactions are carried on with borrowed capital, on which interest has to be paid ; as, further, the maintenance of this organized fraud entails constant expenses, as well as occasional sacrifices ; and as it is in the very nature of the system to generate reckless speculation, the fabric of lies is almost certain ultimately to fall ; and, in falling, to ruin or embarrass many others besides those who had given credit.

Nor does the evil end with the direct penalties from time to time inflicted on honest traders. There is also a grave indirect penalty which they suffer from the system. These forgers of credit are habitually instrumental in lowering prices below their natural level. To meet emergencies, they are obliged every now and then to sell goods at a loss : the alternative being immediate stoppage. Though with each

such concern, this is but an occasional occurrence, yet, taking the whole number of them connected with any one business, it results that there are at all times some who are making sacrifices—at all times some who are unnaturally depressing the market. In short, the capital fraudulently obtained from some traders, is, in part, dissipated in rendering the business of other traders deficiently remunerative: often to their serious embarrassment.

If, however, the whole truth must be said, the condemnation visited on these commercial vampires is not to be confined wholly to them; but is in some degree deserved by a much more numerous class. Between the penniless schemer who obtains the use of capital by false pretences, and the upright trader who never contracts greater liabilities than his estate will liquidate, there lie all gradations. From businesses carried on entirely with other people's capital, obtained by forgery, we pass to businesses in which there is a real capital of one-tenth, and a credit-capital of nine-tenths; to other businesses in which the ratio of real to fictitious capital is somewhat greater; and so on until we reach the very extensive class of men who trade but a little beyond their means. By insensible steps we advance from the one extreme to the other; and these most venial transgressors cannot be wholly absolved from the criminality which so clearly attaches to the rest. To get more credit than would be given were the state of the business fully known, is in all cases the aim; and the cases in which this credit is partially unwarranted, differ only in degree from those in which it is wholly unwarranted. As most are beginning to see, the prevalence of this indirect dishonesty has not a little to do with our commercial disasters. Speaking broadly, the tendency is for every trader to hypothecate the capital of other traders, as well as his own. And when A has borrowed on the strength of B's credit; B on the strength of C's; and C on the strength of A's—when, throughout the trading world, each has made engagements which he can meet only by direct or

indirect aid—when everybody is wanting help from some one else, to save him from falling; a crash is certain. The punishment of a general unconscientiousness may be postponed; but it is sure to come eventually.

The average commercial morality cannot, of course, be accurately depicted in so brief a space. On the one hand, we have been able to give but a few typical instances of the mal-practices by which trade is disgraced. On the other hand, we have been obliged to present these alone; unqualified by the large amount of honest dealing throughout which they are dispersed. While, by accumulating such evidences, the indictment might be made much heavier; by diluting them with the immense mass of equitable transactions daily carried on, the verdict would be greatly mitigated. After making all allowances, however, we fear that the state of things is very bad. And our impression on this point is due less to the particular facts above given, than to the general opinion expressed by our informants. On all sides we have found the result of long personal experience, to be the conviction that trade is essentially corrupt. In tones of disgust or discouragement, reprehension or derision, according to their several natures, men in business have one after another expressed or implied this belief. Omitting the highest mercantile classes, a few of the less common trades, and those exceptional cases where an entire command of the market has been obtained, the uniform testimony of competent judges is, that success is incompatible with strict integrity. To live in the commercial world it appears necessary to adopt its ethical code: neither exceeding nor falling short of it—neither being less honest nor more honest. Those who sink below its standard are expelled; while those who rise above it are either pulled down to it or ruined. As, in self-defence, the civilized man becomes savage among savages; so, it seems that in self-defence, the scrupulous trader is obliged to become as little scrupulous as his competitors. It has been said that



the law of the animal creation is—"Eat and be eaten;" and of our trading community it may be similarly said that its law is—Cheat and be cheated. A system of keen competition, carried on, as it is, without adequate moral restraint, is very much a system of commercial cannibalism. Its alternatives are—Use the same weapons as your antagonists, or be conquered and devoured.

Of questions suggested by these facts, one of the most obvious is—Are not the prejudices that have ever been entertained against trade and traders, thus fully justified? do not these meannesses and dishonesties, and the moral degradation they imply, warrant the disrespect shown to men in business? A prompt affirmative answer will probably be looked for; but we very much doubt whether it should be given. We are rather of opinion that these delinquencies are products of the average English character placed under special conditions. There is no good reason for assuming that the trading classes are intrinsically worse than other classes. Men taken at random from higher and lower ranks, would, most likely, if similarly circumstanced, do much the same. Indeed the mercantile world might readily recriminate. Is it a solicitor who comments on their misdoings? They may quickly silence him by referring to the countless dark stains on the reputation of his fraternity. Is it a barrister? His frequent practice of putting in pleas which he knows are not valid; and his established habit of taking fees for work that he does not perform; make his criticism somewhat suicidal. Does the condemnation come through the press? The condemned may remind those who write, of the fact that it is not quite honest to utter a positive verdict on a book merely glanced through, or to pen glowing eulogies on the mediocre work of a friend while slighting the good one of an enemy; and may further ask whether those who, at the dictation of an employer, write what they disbelieve, are not guilty of the serious offence of adulterating public opinion. Moreover, traders might contend that many of their delinquencies are

thrust on them by the injustice of their customers. They, and especially drapers, might point to the fact that the habitual demand for an abatement of price, is made in utter disregard of their reasonable profits; and that to protect themselves against attempts to gain by their loss, they are obliged to name prices greater than those they intend to take. They might also urge that the strait to which they are often brought by the non-payment of accounts due from their wealthier customers, is itself a cause of their mal-practices: obliging them, as it does, to use all means, illegitimate as well as legitimate, for getting the wherewith to meet their engagements. In proof of the wrongs inflicted on them by the non-trading classes, they might instance the well-known cases of large shopkeepers in the West-end, who have been either ruined by the unpunctuality of their customers, or have been obliged periodically to stop payment, as the only way of getting their bills settled. And then, after proving that those without excuse show this disregard of other men's claims, traders might ask whether they, who have the excuse of having to contend with a merciless competition, are alone to be blamed if they display a like disregard in other forms. Nay, even to the guardians of social rectitude—members of the legislature—they might use the *tu quoque* argument: asking whether bribery of a customer's servant, is any worse than bribery of an elector? or whether the gaining of suffrages by clap-trap hustings-speeches, containing insincere professions adapted to the taste of the constituency, is not as bad as getting an order for goods by delusive representations respecting their quality? No; it seems probable that close inquiry would show few if any classes to be free from immoralities that are as great, *relatively to the temptations*, as these which we have been exposing. Of course they will not be so petty or so gross where the circumstances do not prompt pettiness or grossness; nor so constant and organized where the class-conditions have not tended to make them habitual. But, taken with these qualifications, we think that much

might be said for the proposition that the trading classes, neither better nor worse intrinsically than other classes, are betrayed into their flagitious habits by external causes.

Another question, here naturally arising, is—Are not these evils growing worse? Many of the facts we have cited seem to imply that they are. And yet there are many other facts which point as distinctly the other way. In weighing the evidence, we must bear in mind, that the much greater public attention at present paid to such matters, is itself a source of error—is apt to generate the belief that evils now becoming recognized, are evils that have recently arisen; when in truth they have merely been hitherto disregarded, or less regarded. It has been clearly thus with crime, with distress, with popular ignorance; and it is very probably thus with trading-dishonesties. As it is true of individual beings, that their height in the scale of creation may be measured by the degree of their self-consciousness; so, in a sense, it is true of societies. Advanced and highly-organized societies are distinguished from lower ones by the evolution of something that stands for a *social self-consciousness*—a consciousness in each citizen, of the state of the aggregate of citizens. Among ourselves there has, happily, been of late years a remarkable growth of this social self-consciousness; and we believe that to this is chiefly ascribable the impression, that commercial mal-practices are increasing. Such facts as have come down to us respecting the trade of past times, confirm this view. In his “Complete English Tradesman,” Defoe mentions, among other manœuvres of retailers, the false lights which they introduced into their shops, for the purpose of giving delusive appearances to their goods. He comments on the “shop rhetorick,” the “flux of falsehoods,” which tradesmen habitually uttered to their customers; and quotes their defence as being that they could not live without lying. He says, too, that there was scarce a shopkeeper who had not a bag of spurious or debased coin, from which he gave change whenever he could; and that men, even the most honest, triumphed

in their skill in getting rid of bad money. These facts show that the mercantile morals of that day were, at any rate, not better than ours; and if we call to mind the numerous Acts of Parliament passed in old times to prevent frauds of all kinds, we perceive the like implication. As much may, indeed, be safely inferred from the general state of society. When, reign after reign, governments debased the coinage, the moral tone of the middle classes could scarcely have been higher than now. Among generations whose sympathy with the claims of fellow-creatures was so weak, that the slave-trade was not only thought justifiable, but the initiator of it was rewarded by permission to record the feat in his coat of arms; it is hardly possible that men respected the claims of their fellow-citizens more than at present. Times characterized by an administration of justice so inefficient, that there were in London nests of criminals who defied the law, and on all high roads robbers who eluded it, cannot have been distinguished by just mercantile dealings. While, conversely, an age which, like ours, has seen so many equitable social changes thrust on the legislature by public opinion, is very unlikely to be an age in which the transactions between individuals have been growing more inequitable. Yet, on the other hand, it is undeniable that many of the dishonesties we have described are of modern origin. Not a few of them have become established during the last thirty years; and others are even now arising. How are these seeming contradictions to be reconciled?

We believe the reconciliation is not difficult. It lies in the fact that while the *great* and *direct* frauds have been diminishing, the *small* and *indirect* frauds have been increasing: alike in variety and in number. And this admission we take to be quite consistent with the opinion that the standard of commercial morals is higher than it was. For, if we omit, as excluded from the question, the penal restraints—religious and legal—and ask what is the ultimate moral restraint to the aggression of man on man; we find it to be—sympathy

with the pain inflicted. Now the keenness of the sympathy, depending on the vividness with which this pain is realized, varies with the conditions of the case. It may be active enough to check misdeeds which will cause great suffering; and yet not be active enough to check misdeeds which will cause but slight annoyance. While sufficiently acute to prevent a man from doing that which will entail immediate injury on a given person; it may not be sufficiently acute to prevent him from doing that which will entail remote injuries on unknown persons. And we find the facts to agree with this deduction, that the moral restraint varies according to the clearness with which the evil consequences are conceived. Many a one who would shrink from picking a pocket does not scruple to adulterate his goods; and he who never dreams of passing base coin, will yet be a party to joint-stock-bank deceptions. Hence, as we say, the multiplication of the more subtle and complex forms of fraud, is consistent with a general progress in morality; provided it is accompanied with a decrease in the grosser forms of fraud.

But the question which most concerns us is, not whether the morals of trade are better or worse than they have been? but rather—why are they so bad? Why in this civilized state of ours, is there so much that betrays the cunning selfishness of the savage? Why, after the careful inculcations of rectitude during education, comes there in after-life all this knavery? Why, in spite of all the exhortations to which the commercial classes listen every Sunday, do they next morning recommence their evil deeds? What is this so potent agency which almost neutralizes the discipline of education, of law, of religion?

Various subsidiary causes that might be assigned, must be passed over, that we may have space to deal with the chief cause. In an exhaustive statement, something would have to be said on the credulity of consumers, which leads them to believe in representations of impossible advantages; and

something, too, on their greediness, which, ever prompting them to look for more than they ought to get, encourages the sellers to offer delusive bargains. The increased difficulty of living consequent on growing pressure of population, might perhaps come in as a part cause; and that greater cost of bringing up a family, which results from the higher standard of education, might be added. But all these are relatively insignificant. The great inciter of these trading mal-practices is, intense desire for wealth. And if we ask—Why this intense desire? the reply is—It results from the *indiscriminate respect paid to wealth*.

To be distinguished from the common herd—to be somebody—to make a name, a position—this is the universal ambition; and to accumulate riches, is alike the surest and the easiest way of fulfilling this ambition. Very early in life all learn this. At school, the court paid to one whose parents have called in their carriage to see him, is conspicuous; while the poor boy, whose insufficient stock of clothes implies the small means of his family, soon has burnt into his memory the fact that poverty is contemptible. On entering the world, the lessons that may have been taught about the nobility of self-sacrifice, the reverence due to genius, the admirableness of high integrity, are quickly neutralized by experience: men's actions proving that these are not their standards of respect. It is soon perceived that while abundant outward marks of deference from fellow-citizens, may almost certainly be gained by directing every energy to the accumulation of property, they are but rarely to be gained in any other way; and that even in the few cases where they are otherwise gained, they are not given with entire unreserve; but are commonly joined with a more or less manifest display of patronage. When, seeing this, the young man further sees that while the acquisition of property is quite possible with his mediocre endowments, the acquirement of distinction by brilliant discoveries, or heroic acts, or high achievements in art, implies faculties

and feelings which he does not possess ; it is not difficult to understand why he devotes himself heart and soul to business.

We do not mean to say that men act on the consciously reasoned-out conclusions thus indicated ; but we mean that these conclusions are the unconsciously-formed products of their daily experience. From early childhood, the sayings and doings of all around them have generated the idea, that wealth and respectability are two sides of the same thing. This idea, growing with their growth, and strengthening with their strength, becomes at last almost what we may call an organic conviction. And this organic conviction it is, which prompts the expenditure of all their energies in money-making. We contend that the chief stimulus is not the desire for the wealth itself ; but for the applause and position which the wealth brings. And in this belief, we find ourselves at one with various intelligent traders with whom we have talked on the matter. It is incredible that men should make the sacrifices, mental and bodily, which they do, merely to get the material benefits which money purchases. Who would undertake an extra burden of business for the purpose of getting a cellar of choice wines for his own drinking ? He who does it, does it that he may have choice wines to give his guests and gain their praises. What merchant would spend an additional hour at his office daily, merely that he might move into a larger house in a better quarter ? In so far as health and comfort are concerned, he knows he will be a loser by the exchange ; and would never be induced to make it, were it not for the increased social consideration which the new house will bring him. Where is the man who would lie awake at nights devising means of increasing his income, in the hope of being able to provide his wife with a carriage, were the use of the carriage the sole consideration ? It is because of the *éclat* which the carriage will give, that he enters on these additional anxieties. So manifest, so trite, indeed, are these

truths, that we should be ashamed of insisting on them, did not our argument require it.

For if the desire for that homage which wealth brings, is the chief stimulus to these strivings after wealth ; then is the giving of this homage (when given, as it is, with but little discrimination) the chief cause of the dishonesties into which these strivings betray mercantile men. When the shop-keeper, on the strength of a prosperous year and favourable prospects, has yielded to his wife's persuasions, and replaced the old furniture with new, at an outlay greater than his income covers—when, instead of the hoped-for increase, the next year brings a decrease in his returns—when he finds that his expenses are out-running his revenue ; then does he fall under the strongest temptation to adopt some newly-introduced adulteration or other mal-practice. When, having by display gained a certain recognition, the wholesale trader begins to give dinners appropriate only to those of ten times his income, with other expensive entertainments to match—when, having for a time carried on this style at a cost greater than he can afford, he finds that he cannot discontinue it without giving up his position ; then is he most-strongly prompted to enter into larger transactions ; to trade beyond his means ; to seek undue credit ; to get into that ever-complicating series of misdeeds, which ends in disgraceful bankruptcy. And if these are the facts—the undeniable facts—then is it an unavoidable conclusion that the blind admiration which society gives to mere wealth, and the display of wealth, is the chief source of these multitudinous immoralities.

Yes, the evil is deeper than appears—draws its nutriment from far below the surface. This gigantic system of dishonesty, branching out into every conceivable form of fraud, has roots that run underneath our whole social fabric, and, sending fibres into every house, suck up strength from our daily sayings and doings. In every dining-room a rootlet finds food, when the conversation turns on So-and-so's successful speculations, his purchase of an estate, his probable



worth—on this man's recent large legacy, and the other's advantageous match ; for being thus talked about is one form of that tacit respect which men struggle for. Every drawing-room furnishes nourishment, in the admiration awarded to costliness—to silks that are "rich," that is, expensive ; to dresses that contain an enormous quantity of material, that is, are expensive ; to laces that are hand-made, that is, expensive ; to diamonds that are rare, that is, expensive ; to china that is old, that is, expensive. And from scores of small remarks and minutiae of behaviour, which, in all circles, hourly imply how completely the idea of respectability involves that of costly externals, there is drawn fresh pabulum.

We are all implicated. We all, whether with self-approbation or not, give expression to the established feeling. Even he who disapproves this feeling, finds himself unable to treat virtue in threadbare apparel with a cordiality as great as that which he would show to the same virtue endowed with prosperity. Scarcely a man is to be found who would not behave with more civility to a knave in broadcloth than to a knave in fustian. Though for the deference which they have shown to the vulgar rich, or the dishonestly successful, men afterwards compound with their consciences by privately venting their contempt ; yet when they again come face to face with these imposing externals covering worthlessness, they do as before. And so long as imposing worthlessness gets the visible marks of respect, while the disrespect felt for it is hidden, it naturally flourishes.

Hence, then, is it that men persevere in these evil practices which all condemn. They can so purchase a homage which, if not genuine, is yet, so far as appearances go, as good as the best. To one whose wealth has been gained by a life of frauds, what matters it that his name is in all circles a synonym of roguery ? Has he not been conspicuously honoured by being twice elected mayor of his town ? (we state a fact) and does not this, joined to the personal consideration shown him, outweigh in his estimation all that is

said against him : of which he hears scarcely anything ? When, not many years after the exposure of his inequitable dealing, a trader attains to the highest civic distinction which the kingdom has to offer ; and that, too, through the instrumentality of those who best know his delinquency ; is not the fact an encouragement to him, and to all others, to sacrifice rectitude to aggrandizement ? If, after listening to a sermon that has by implication denounced the dishonesties he has been guilty of, the rich ill-doer finds, on leaving church, that his neighbours cap to him ; does not this tacit approval go far to neutralize the effect of all he has heard ? The truth is, that with the great majority of men, the visible expression of social opinion is far the most efficient of incentives and restraints. Let any one who wishes to estimate the strength of this control, propose to himself to walk through the streets in the dress of a dustman, or hawk vegetables from door to door. Let him feel, as he probably will, that he had rather do something morally wrong than commit such a breach of usage, and suffer the resulting derision. And he will then better estimate how powerful a curb to men is the open disapproval of their fellows ; and how, conversely, the outward applause of their fellows is a stimulus surpassing all others in intensity. Fully realizing which facts, he will see that the immoralities of trade are in great part traceable to an immoral public opinion.

Let none infer, from what has been said, that the payment of respect to wealth rightly acquired and rightly used, is deprecated. In its original meaning, and in due degree, the feeling which prompts such respect is good. Primarily, wealth is the sign of mental power ; and this is always respectable. To have honestly-acquired property, implies intelligence, energy, self-control ; and these are worthy of the homage that is indirectly paid to them by admiring their results. Moreover, the good administration and increase of inherited property, also requires its virtues ; and therefore demands its share of approbation. And besides being ap-

plauded for their display of faculty, men who gain and increase wealth are to be applauded as public benefactors. For he who, as manufacturer or merchant, has, without injustice to others, realized a fortune, is thereby proved to have discharged his functions better than those who have been less successful. By greater skill, better judgment, or more economy than his competitors, he has afforded the public greater advantages. His extra profits are but a share of the extra produce obtained by the same expenditure: the other share going to the consumers. And similarly, the landowner who, by judicious outlay, has increased the value (that is, the productiveness) of his estate, has thereby added to the stock of national capital. By all means, then, let the right acquisition and proper use of wealth, have their due share of admiration.

But that which we condemn as the chief cause of commercial dishonesty, is the *indiscriminate* admiration of wealth—an admiration that has little or no reference to the character of the possessor. When, as very generally happens, the external signs are revered, where they signify no internal worthiness—nay, even where they cover internal unworthiness; then does the feeling become vicious. It is this idolatry which worships the symbol apart from the thing symbolized, that is the root of all these evils we have been exposing. So long as men pay homage to those social benefactors who have grown rich honestly, they give a wholesome stimulus to industry; but when they accord a share of their homage to those social malefactors who have grown rich dishonestly, then do they foster corruption—then do they become accomplices in all these frauds of commerce.

As for remedy, it manifestly follows that there is none save a purified public opinion. When that abhorrence which society now shows to direct theft, is shown to theft of all degrees of indirectness; then will these mercantile vices disappear. When not only the trader who adulterates or gives

short measure, but also the merchant who overtrades, the bank-director who countenances an exaggerated report, and the railway-director who repudiates his guarantee, come to be regarded as of the same genus as the pickpocket, and are treated with like disdain; then will the morals of trade become what they should be.

We have little hope, however, that any such higher tone of public opinion will shortly be reached. The present condition of things appears to be, in great measure, a necessary accompaniment of our present phase of progress. Throughout the civilized world, especially in England, and above all in America, social activity is almost wholly expended in material development. To subjugate Nature, and bring the powers of production and distribution to their highest perfection, is the task of our age; and probably of many future ages. And as in times when national defence and conquest were the chief desiderata, military achievement was honoured above all other things; so now, when the chief desideratum is industrial growth, honour is most conspicuously given to that which generally indicates the aiding of industrial growth. The English nation at present displays what we may call the commercial diathesis; and the undue admiration for wealth appears to be its concomitant—a relation still more conspicuous in the worship of “the almighty dollar” by the Americans. And while the commercial diathesis, with its accompanying standard of distinction, continues, we fear the evils we have been delineating can be but partially cured. It seems hopeless to expect that men will distinguish between that wealth which represents personal superiority and benefits done to society, from that which does not. The symbols, the externals, have all the world through swayed the masses; and must long continue to do so. Even the cultivated, who are on their guard against the bias of associated ideas, and try to separate the real from the seeming, cannot escape the influence of current opinion. We must therefore content ourselves with looking for a slow amelioration.

Something, however, may even now be done by vigorous protest against adoration of mere success. And it is important that it should be done; considering how this vicious sentiment is being fostered. When we have one of our leading moralists preaching with increasing vehemence, the doctrine of sanctification by force—when we are told that while a selfishness troubled with qualms of conscience is contemptible, a selfishness intense enough to trample down everything in the unscrupulous pursuit of its ends, is worthy of all admiration—when we find that if it be sufficiently great, power, no matter of what kind or how directed, is held up for our reverence; we may fear lest the prevalent applause of mere success, together with the commercial vices which it stimulates, should be increased rather than diminished. Not at all by this hero-worship grown into brute-worship, is society to be made better; but by exactly the opposite—by a stern criticism of the means through which success has been achieved; and by according honour to the higher and less selfish modes of activity.

And happily the signs of this more moral public opinion are already showing themselves. It is becoming a tacitly-received doctrine that the rich should not, as in bygone times, spend their lives in personal gratification; but should devote them to the general welfare. Year by year is the improvement of the people occupying a larger share of the attention of the upper classes. Year by year are they voluntarily devoting more and more energy to furthering the material and mental progress of the masses. And those among them who do not join in the discharge of these high functions, are beginning to be looked upon with more or less contempt by their own order. This latest and most hopeful fact in human history—this new and better chivalry—promises to evolve a higher standard of honour; and so to ameliorate many evils: among others those which we have detailed. When wealth obtained by illegitimate means inevitably brings nothing but disgrace—when to wealth rightly

acquired is accorded only its due share of homage, while the greatest homage is given to those who consecrate their energies and their means to the noblest ends; then may we be sure that, along with other accompanying benefits, the morals of trade will be greatly purified.

THE END.









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