

HUMANE SCIENCE LECTURES

BY VARIOUS AUTHORS

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P R E F A C E .

THE Lectures which are here reprinted were delivered last winter under the auspices of the Humanitarian League and the Leigh Browne Trust, and were designed as a protest against what may be described in the words of the first Lecture as "the attempt of Modern Science to get rid of human feeling and to look at everything in the dry light of the intellect."

The first Lecture is introductory, and is devoted to a statement of the case for the necessity of a Rational and Humane Science, which in its operation shall take cognizance of the sensuous and moral elements as essential parts in the indivisible whole, in due proportion with the purely intellectual.

The Humane Study of Natural History, a science which unfortunately has hitherto been prosecuted with an almost total disregard of all consideration of humanity, follows as a striking application of the principles set forth. The third and fourth Lectures exemplify the

same principle as applied to human affairs. The Treatment of Prisoners, in as far as it can lay claim to be based on any scientific principles at all, is, under the Du Cane system, open to the serious charge of disregarding systematically and brutally the humane element which in a rational science must form a part ; and the complete failure of the system has followed as a natural consequence. In the fourth Lecture the principles are applied to medical science, which has hitherto been retarded by the same unscientific neglect of an essential condition in the problem, and the lecturer seeks to induce the profession—in the study of the causation and treatment of disease—to give due weight to the subtle influence exercised by the mind on the body, without which no medical science can be either rational or humane

August, 1897.



**THE NEED OF A RATIONAL
AND HUMANE SCIENCE:**

By

EDWARD CARPENTER.

THE NEED OF A RATIONAL AND HUMANE SCIENCE.

IN bringing before you this subject of a Rational and Humane Science you will perhaps forgive me if I dwell for a few moments on some points of personal history in relation to it. After reading mathematics for some four years at Cambridge, it happened to me for the next ten years or so to be engaged in the study of the physical sciences, and in lectures on these subjects. Naturally, during the earlier part of this period I accepted the current methods and conclusions without any question. But as time went on I became aware of a certain dissatisfaction; I felt that many of the laws of Science, enounced as universal truths, were of very limited application only, that many of the conclusions, so strongly insisted on, were of quite doubtful validity; and at last this increasing dissatisfaction culminated in a rather violent attack

or criticism of Modern Science which I wrote and published about the year 1884.

Now, looking back, at this interval of time, though I admit that my attack was somewhat hasty and crude in detail, I feel that in its main contention it was thoroughly justified, and I do not feel the least inclined to withdraw from it.

What was that main contention? It was as follows. Modern Science is an attempt (and no doubt it would accept this definition of itself) to survey and classify the phenomena of the world in the pure dry light of the intellect, uncoloured by feeling; and so far is an effort to separate the intellectual in man from the merely perceptive, the emotional, the moral, and so forth. It was in this very fact that my criticism lay; for I contended that such a separation was in the long run quite impossible.

But before proceeding to defend this position let me admit at once that this attempt of Modern Science to get rid of human feeling and to look at everything in the dry light of the intellect was in some respects a very grand one. When you consider what the Old-time

Science was, with its fancies and prejudices, its dragons pasturing upon the sun and moon in eclipses, its immolations of hundreds of human beings to appease some god of pestilence or earthquake, its panics, its superstitions, and its incapability of regarding anything except from the point of view of its influence on man's own comfort and his little hopes and fears, it was indeed a grand advance to try and see *facts*, uncoloured and for themselves alone. It was an effort of Man as it were to rise above himself, to which I accord the fullest credit and honour.

And yet, during the time spoken of, it kept growing on me: first, that the attempt was an impossible one; secondly, that the Science so-called was not a true Science; and, thirdly, that in its pretence to an intellectual exactitude which it did not really possess, this Modern Science was leading to a narrow-mindedness and a dogmatism as bad as the old.

There is in fact (so I think) a fallacy in the attempt. But how shall I describe it? Our relations to the world may, quite roughly speaking, be divided into three groups—those

that are sensuous and perceptual, those that are purely intellectual, and those that are of an emotional and moral order. Take any object of Nature—a bird, for instance. We may look upon the bird as an object of sense-perceptions—its form, its colour, its song, and so forth. Some people attain to extraordinary skill and quickness in this department, recognising in a moment the note or even the flight of a songster. Then, again, we may look upon the bird from the intellectual side—we may study it in relation to its surroundings—the form of its wings, the length of its leg, the character of its beak, and their adaptation to its habits, to its locality, to its food, and so forth. Thus, we may get a whole series of purely intellectual results—relations of the bird to the world in which it lives. This is the special field of the present-day Science. But, again, we may regard the bird in its emotional and moral relations to *us*. One man at the sight of it may be affected with admiration of its beauty, with tenderness towards it, or sympathy; another may be stimulated to wonder whether he can kill it, or whether it is good to eat!

Modern Science is indifferent to what this last set of relations may be ; it does not concern itself much with the first ; but it takes the middle term, the purely intellectual, and seeks to abstract that from the others, to study the bird, or whatever the object may be, in the one aspect only. But can that really be done ?—The answer is, of course, No.

To show my general meaning, and why I consider the claim an impossible one, let us imagine a little cell—one of the myriads which constitute the human body—professing in the same sort of way to stand outside the body and explain the laws of the other cells and the body at large. It is obvious that the little cell, swept along in the currents of the body and swayed by its emotions, in close proximity and contact with some portions of the organism, and far remote from others, cannot possibly pretend to any such impartial judgment. It is obvious not only that it would not have all the clues of the problem at its command, but that its own needs and experiences would prejudice it frightfully in the interpretation of such clues as it had. Yet man is such a little cell in the body of

Nature, or if you like, in the body of the Society of which he forms a part.

There is, however, one way, it seems to me, in which a cell in the human body *might* come to an adequate understanding of the body; and that would be rather through experience than through direct reasoning. It is conceivable that there might be some cell in the body which through the nerves, &c., was in actual touch and sympathetic relationship with every other cell. Then it certainly would have the materials of the required solution. Every change in other parts of the body would register itself in this particular cell; and its little brain (if it had one) without exactly making any great effort, would reflect sympathetically the structure of the whole body—would become in fact a mirror of it. This will perhaps give you the key to my notion of what a true Science might be.

But before proceeding to that, I want to go a little more in detail into the fallacy of the absolute intellectual view of Science. I say, first, that a complete summary of any object or process in Nature is impossible; secondly, that such summary as we do make is, and

must inevitably and necessarily be, coloured by the underlying *feeling* with which we approach that phase of Nature.

To take the first point. You say, Why is a complete summary not possible? A watch or other machine may be completely described and defined, why should not (with a little more knowledge) a fir-tree, or the human eye, or the solar system, be completely described and defined?

And this brings us to what may be called the Machine-view of Science. It is curious (and yet I think it will presently be seen that it is quite what might have been expected) that during this last century or so, in which Machinery has played such an important part in our daily and social life, mechanical ideas have come to colour all our conceptions of Science and the Universe. Modern Science holds it as a kind of ideal (even though finding it at times difficult to realise) to reduce everything to mechanical action, and to show each process of Nature intelligible in the same sense as a Machine is intelligible. Yet this conception, this ideal, involves a complete fallacy. For the moment you come to think

of it, you see that *no* part of Nature really even resembles a machine.

What is a machine in the ordinary sense? It is an aggregation of parts put together to fulfil certain definite actions and no others. A sewing-machine fulfils the purpose of sewing, a watch fulfils that of keeping time, and they fulfil those purposes only. All their parts subserve those actions, and in that sense may be completely described—as far as just their mechanical action is concerned—the same by a thousand mechanics. But I make bold to say that *no* object in Nature fulfils just one action, or series of actions, and no others. On the contrary, every object fulfils an endless series of actions.

Let us take the Human Eye. And I choose this as an instance most adverse to my position, for there is no doubt that the Human Eye is one of the most highly specialised objects in creation. Helmholtz, as you know, is said to have remarked concerning it, that if an Optician had sent him an instrument so defective, he should have returned it with his compliments. Helmholtz was a great man, and I will not do him the injustice to suppose

that he did not know what he was saying. He knew that, regarded as a machine for focussing rays of light, the eye was decidedly defective; but then he knew well enough doubtless *why* it was defective—namely, because it is by no means merely such a machine, but a great deal more.

The Eye, in fact, not only fulfils the action of focussing rays of light—like an Opera Glass or a Telescope—but it might be compared to another instrument, a Photographic Camera, in respect of the fact that it forms a picture of the outer world which it throws on a sensitive plate at the back—the Retina. But then, again, it is unlike any of these “machines,” in the fact that it was never made by any Optician, human or divine, for any one definite purpose. On the contrary, as we know, it has grown, it has evolved; it has come down to us over the centuries, and over thousands and thousands of centuries, from dim beginnings in the lowliest organisms who first conceived the faculty of Sight, continually modified, continually shapen by small increments in various directions, in accordance with the myriad needs of a myriad creatures,

living some of them in water, some of them in air, requiring some of them to see at close quarters, some at great distances, some by one kind of light and some by another, and so forth. So that to-day it not only contains a great range of inherited, yet latent, faculties, but it is actually, in its complex structure, an epitome and partial record of its own extraordinary history.

As an instance of this last point, let me remind you that Sight was originally a differentiation of Touch. The light, the shadows, falling on the sensitive general surface of a primitive organism provoke a tactile irritation. In the course of evolution this sense specialises itself at some point of the surface into what we call Sight. Now, to-day, when the little picture formed by the fore-part of the Human Eye falls upon the Retina at the back, it falls upon a screen formed by the myriad congregated finger-tips, so to speak, of the optic nerve—the rods and cones, so-called—which cover like a mosaic the whole ground of the retina, and *feel* with their sensitive points the images of the objects in the outer world. And so Sight is still Touch

—it is the power of feeling or touching at a distance—as one sometimes in fact becomes aware in looking at things.

But then again on and beyond all these things—beyond the focussing and photographing of rays, beyond the latent adaptations to the needs of innumerable creatures, and the epitomising of ages of evolution, the Human Eye has faculties even more far-reaching perhaps and wonderful. It is the marvellous organ of human Expression. By the dilatations and contractions of the iris, by the altering convexities of the lens and the eyeball, and in a hundred other ways, it manages somehow to convey intelligence of Command, Control, Power, of Pity, Love, Sympathy, and all those myriad emotions which flit through the human mind—an endless series—a perfect encyclopædia. It is difficult even to imagine the eye without this power of language. And what other functions it may have it is not necessary to enquire. Highly specialised though it is, it is already obvious enough that to call it a Machine for focussing rays of light is monstrously and ludicrously inadequate—even as it would be to call the Heart (the

very centre of emotion and life, and the symbol of human love and courage) a common Pump.

Nature is an infinitude, and can at no point be circumscribed by the human intellect. Nor obviously is there any sense in taking one little portion of Nature and isolating it from the rest, and then describing it exhaustively *as if* it really were so isolated. A thousand mechanics will agree, as I have said, in their description of a machine—because in fact they will agree to view the machine just in the one aspect of its particular action ; but ask a thousand people to describe one and the same face—or better still, get a thousand portrait-painters, skilled in their art, to paint portraits of the same face—and you know perfectly well that all the likenesses will be different. And why will they be different ? Simply because every face, however rude, has infinite sides, infinite aspects, and each painter selects what he paints from his own point of view. And the same is true of every object and process in Nature.

Then if these things are true (you ask again) how is it that scientific men *do* arrive at

definite conclusions, and do agree with each other so far as they do?

It is, and obviously must be, by the method of isolation; by the method of selecting certain aspects of the problems presented to them, and ignoring others. For since *all* the relations of any phenomenon of Nature cannot possibly be compassed, the only way *must* be to ignore some and concentrate attention on others; and when there is a kind of tacit agreement as to which aspects shall be passed over and which considered, there is naturally an agreement in the results. Thus by this method, waiving all other aspects of the problem, the Eye may be described and defined as an optical instrument, the Heart as a common Pump, and the Solar System as a neat illustration of certain mechanical laws discovered by Galileo and Newton.

On the subject of the Solar System and Astronomy I will dwell for a few moments, as here—in this great example of the perfection of Modern Science—we have again a case apparently most adverse to my contention. The generalisations by which Newton established the nature of the planetary

orbits have been a wonder to succeeding generations; the positions of the planets can be foretold, eclipses can be calculated with amazing accuracy. Yet every tyro in Mathematics knows that the equations which give these results can only be solved by what is called "neglecting small quantities"—that is, the problems cannot be solved in their entirety, but by leaving out certain terms and elements, which do not appear important, a solution can be approached. And naturally it has been an important point to show that these small quantities *may* be safely neglected. In the case, for instance, of the orbits of the planets round the sun, and of the moon round the earth, it was for a long time taken as proved that the small variations in the shape and position of each elliptic orbit would never be accompanied by any permanent increase or diminution in its *size*—that is, that the *mean distances* of the planets from the sun, and of the moon from the earth, would always remain within certain limits. Of late years, however, Professor George Darwin, taking up one of these poor little neglected quantities in the theory of the moon, found that it indicated

after all very vast and very permanent, though of course very slow, changes in her mean distance from the earth; so that now it appears probable that the Moon's true orbit instead of being a limited ellipse, is a continually, though gradually, enlarging Spiral—which may some day carry it to a great distance from the earth. If an eclipse were calculated for 20 years in advance on the Elliptic theory or the Spiral theory it would probably—so slow would be the divergence—make no perceptible difference; but in a hundred centuries the two theories would lead to results utterly different.

Thus the certitude of Astronomy as a Science arises largely from the fact that our *times* are so brief compared with Celestial periods. The proper periods of Celestial changes are to be reckoned by thousands, perhaps millions, of years, but we, ignoring *that* aspect of the problem, fix our observations on one little point of time, and are quite satisfied with the result!

As another illustration of my meaning, consider the Fixed Stars, so-called. These stars in their groups and clusters, which we

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know so well by sight, have remained apparently in the very same, or nearly the same, relative positions during all the 2,000 or 3,000 years that we have any record of the shapes of the Constellations. Yet now by minute telescopic and spectroscopic examination we know that they are moving, and have been moving all the time, in various differing directions with great velocities—amounting to miles per second. Nevertheless, so great are the spaces concerned, so great the times, that all this long period has not sufficed to bring them into any greatly changed attitude with regard to each other! What would you think of an intelligent foreigner who, coming to England to study the game of cricket, remained on the cricket field for a quarter of a minute—during which time the players would have hardly changed their positions—and having noted a few points, went away and wrote a volume on the laws of the game? And what are we to think of poor little Man who, having noted the stars for a few centuries, is so sure that he understands their movements, and that he is versed in all the “ordinances of heaven.”

Thus it would appear that every Nature-problem is so enormously complex that it can only be got at by what may be called the Method of Ignorance. Let us take a practical Science problem like that of Vaccination. The question here, put in its simplest terms, seems to be, Whether Vaccination, with calf or human lymph, prevents or alleviates Small-pox; and if it does, whether it does so without engendering other evils at least as great. At first sight this may appear to you a very simple question, and easy to solve; but the moment you come to think about it, you see its extreme complexity. In the first place, it is obvious that in a question like this, individual cases afford no test. It is obvious that the fact that A. is vaccinated and has not taken small-pox proves nothing, for there is nothing to show that he would have taken it if he had not been vaccinated. And when you have got people vaccinated by the hundred and the thousand, you still are not certain; for these people may belong to a certain class, or a certain locality, or may have certain habits and conditions of life, which may account for their comparative immunity, and

these causes must be eliminated before any definite conclusion can be reached. Thus it is not till the great mass of the population is vaccinated that we can expect reliable statistics. But the introduction of a practice of this kind on so great a scale necessarily takes a long period of years, and meanwhile changes are taking place in the habits of the people, Sanitation is being improved, customs of Diet are altering, possibly (as so often happens in the history of an epidemic) the disease, having run its course, is beginning spontaneously to decline. And thus another series of possible causes has to be discussed.

Then, supposing the question, notwithstanding all these difficulties, to be so far settled in favour of the present system—there still arises that whole other series of difficulties with regard to the possibility of the spread of *other* diseases by the practice, and with regard to the *extent* of such spread, before we can arrive at any finale. This series of questions is almost as complex as the other; and it includes that great element of uncertainty—the question what interval of time may elapse between inoculation with a disease and its

actual appearance. For if in several cases children break out with erysipelas immediately after vaccination of course there is a certain presumption that vaccination has been the cause; but if the erysipelas only appears some years after, its connection with the operation may, though real, be impossible to trace.

The matter standing thus, it seems to us almost a mystery how it was that the medical authorities of the early days of Jennerism were so cocksure of their conclusions—until we remember that in arriving at those conclusions they practically *ignored* all these other points that I have mentioned, like changes of Sanitation, spontaneous decline of Small-pox, the spread of other diseases, &c., and simply limited themselves to one small aspect of the problem. But now, after this interval of time, when the neglected facts and aspects have meanwhile *forced* themselves on our attention, how remarkable is the change of attitude as evidenced by the finding of the late Royal Commission!

From all this do not understand me to deride Science—for I have no intention of doing that; on the contrary, I think the debt

we owe to modern investigation quite incalculable; but I only wish to warn you how complex all these problems are, how impossible that notion of settling even one of them by a cut-and-dried intellectual formula.

But you will ask (for this is the second point I mentioned some little time back) *how* people's emotions and feelings come in to colour their scientific conclusions? And the answer is—very simply, namely, by directing their choice as to what aspects of the problem they will ignore and what aspects they will envisage; by determining their point of view, in fact. To return to that illustration of several portrait-painters painting the same face; just as each painter is led by his feelings, his sympathies, his general temperament, to select certain points in the face and to pass over others, so each group of scientific men in each generation is led by its sympathies, its idiosyncrasies, to envisage certain aspects of the problems of the day and to ignore others.

The whole history of Science illustrates this. We are all familiar with the way in which the predilections of religious feeling in the time of Copernicus and Galileo retarded

the progress of astronomical Science. As long as people believed that a divine drama of redemption had been enacted on this earth alone, they naturally concluded that this earth was the centre of the universe, and refused to look at facts which contradicted their conclusion. When Galileo turned his newly-made telescope on Jupiter and saw it circled by its satellites, he saw in this an image of the Copernican system and of the planets circling round the central Sun; but when he asked others to share his observation and his inference, they would not. "O, my dear Kepler," he writes in a letter to his fellow astronomer, "how I wish we could have one hearty laugh together. Here at Padua is the principal Professor of Philosophy, whom I have repeatedly and urgently requested to look at the moon and planets through my glass; but he pertinaciously refuses to do so. What shouts of laughter we should have at this glorious folly!"

And though we laugh at the folly of those before us, we do the same things ourselves to-day. Take the science of Political Economy. A revolution has taken place in that, almost

comparable to the change from the geocentric to the heliocentric view in Astronomy. During the distinctively commercial period of the last 100 years, the leading students of social science, being themselves filled with the spirit of the time, have been fain to look upon the acquisition of private wealth as the one absorbing motive of human nature; and so it has come about that the economists, from Adam Smith to John Stuart Mill, have founded their science on self-seeking and competition, as the base of their analysis. To-day another series of economists coming to the front—their minds pre-occupied with the great facts of Community of life and Co-operation—have discovered that Society is in the main an illustration of these latter principles, and have evolved a quite new phase of the science. It is not that Society has changed so much during this period, as that the altered point of view of the students of Society has caused them simply to fix their attention on a different aspect of the problem and a different range of facts.

I have alluded already to the way in which the prevalent use of Machinery in practical

life has affected our mental outlook on the world. It is curious that during this mechanical age of the last 100 years or so, we have not only come to regard Society in a mechanical light, as a concourse of separate individuals bound together by a mere cash-nexus, but have extended the same idea to the universe at large, which we look upon as a concourse of separate atoms, associated together by gravitation, or possibly by mere mutual impact. Yet it is certain that both these views are false, since the individuals who compose Society are *not* separate from each other; and the theory that the universe, in its ultimate analysis, is composed of a vast number of discrete atoms is simply unthinkable.

When we come to a practical and modern question like Medicine, the influence of the spirit in which it is approached on the course of the science is very easy to see. For if the science of Medicine is approached (as it perhaps mostly is to-day) in a spirit of combined Fear and Self-indulgence—fear for one's own personal safety, combined with a kind of anxiety to continue living in the

indulgence of habits known to be unhealthy—if it is approached in this uncomfortable contradictory state of mind, it is pretty obvious that its course will be similarly uncomfortable; that it will consist for the most part in a search for drugs which shall, without effort on our part, palliate the effects of our misconduct; in the discovery, as in a kind of nightmare, that the air round us is full of billions of microbes; in a terrified study of these messengers of disease, and in a frantic effort to ward them off by inoculations, vaccinations, vivisections, and so forth, without end.

If, on the other hand, the science is approached from quite a different side—from that of the love of Health, and the desire to make life lovely, beautiful and pure; if the student is filled not only with this, but with a great belief in the essential *power* of Man, and his command in creation, to control not only all these little microbes whose name is Legion, but through his mind all the processes of his body; then it is obvious enough that a whole series of different facts will arise before his eyes and become the subject of his study—

facts of sanitation, of the laws of cleanly life, diet, clothing and so forth, methods of control, and the details and practice of the influence of the mental upon the physical part of man—facts quite equally real with the others, equally important, equally numerous perhaps and complex, but forming a totally different range of science.

In conclusion, you begin to see doubtless that I do not believe in a science of mere Formulas, which can be poured from one brain to another like water in a pot. I believe in something more organic to Humanity—which shall combine Sense, Intellect and Soul; which shall include the keenest training of the Senses, the exactest use of the Brain, and the subordination of both of these to the finest and most generous attitude of Man towards Nature.

To come to quite practical aspects, I think that Physical Science, and for that matter Natural History too, ought to be founded on the closest observation and actual intimacy with Nature. It is notorious that in many respects the perceptions, the Nature-intuitions, of savage races far outdo those of civilised

man. We have let that side go slack, and too often the man of science when he comes out of his study is a mere baby in the external world. I look back with a kind of shame when I think that I studied the mathematical side of Astronomy for three or four years at Cambridge and absolutely at the time hardly knew one star from another in the sky. But such are the methods of teaching that have been in use. They ought, however, to be reversed, and practical acquaintance with the facts should come a long way first, and then be succeeded by inductive and deductive reasoning when the difficulties of the subject have forced themselves on the student's mind.

Then in Natural History and Botany I think that we have hitherto not only neglected the perceptive side, but also what may be called the intuitive and emotional aspects. If any one will attend to the subject, I believe they will perceive that there are dormant in the mind the finest intuitions and instincts of relationship to the various animals and plants—intuitions which have played a far more important part in the life of barbaric races

than they do to-day.* Primitive peoples have a remarkable instinct of the medicinal and dietetic uses of herbs and plants—an instinct which we also find well developed among animals—and I believe that this kind of knowledge would grow largely if, so to speak, it were given a chance. The formal classification of animals and plants—which now forms the main part of these sciences—would then come in simply as an aid and an auxiliary to the more direct and human study.

Again, let us take the science of Physiology. At present this is mainly carried on by means of Dissection or Vivisection. But both these methods are unsatisfactory. Dissection, because it amounts to studying the organisation of a living creature by the examination of its dead carcase; and Vivisection, because it is not only open to a similar objection, but because it necessarily violates the highest relation of man to the animal he is studying. There is, I believe, another method—a method which

* Elisée Reclus, in his remarkable paper, *La Grande Famille*, points out the wide-reaching *Friendship*, and free alliance for various purposes, of primitive man with the animals, existing long before the so-called “domestication” of the latter.

has been known in the East for centuries, though little regarded in the West—which may perhaps be called the method of Health. It consists in rendering the body by proper habits of life, pure and healthy, till it becomes, as it were, transparent to the inner eye, and then projecting the consciousness *inward* so as to become almost as sensible of the structure and function of the various internal organs, as it usually is of the outer surface of the body. Of course this is a process which cannot be effectuated at once, and which may need help and corroboration by external methods of study, but I believe it is one which will lead to considerable results. There is no doubt that many of the Yogis of India attain to great skill in it.

Similarly, from what we have already said about Political Economy, it is obvious that satisfactory results in that science must depend immensely on the high degree of social instinct and feeling with which the student approaches it, and on the thoroughness of his acquaintance with the *actual life* of a people; and that the development of these factors is fully as important a part of the science as that

which consists in the logical ordering and arrangement of the material obtained.

I need not, I think, go any further into detail of new methods in each Science. You remember what I said at the beginning about the Cell studying the Body of which it formed a part. We may imagine, if we like, three stages in this process. In the first stage the Cell regards the other cells and the Body simply from the point of view of how they affect *it*, and its comfort and safety. This might be taken to correspond to the Old-time Science. In the second stage the Cell, with its tiny experience of the other cells and the small part of the body in which it is placed, becomes highly intellectual and professes to lay down the laws of the structure of the body generally. This corresponds to the attitude of Modern Science. In the third stage the Cell, growing and evolving, and coming daily into closer sympathetic relationship with all parts of the body, begins to find its true relation to the other cells, not to use *them*, but to fulfil its part in the whole. Gradually drawing all the threads together and coming more and more, so to say, into a

central position, it at last in its little brain spontaneously and inevitably reflects the whole, and becomes the mirror of it. This would answer to what we have called a really rational and humane Science.

Man has to find and to *feel* his true relation to other creatures and to the whole of which he is a part, and has to use his brain to further this. Science *is*, as we all know, the search for Unity. That is its ideal. It unites innumerable phenomena under one law; and then it unites many laws under one higher; always seeking for the ultimate complete integration. But (is it not obvious?) Man cannot find that unity *of* the Whole until he feels his unity *with* the Whole. To found a Science of one-ness on the murderous Warfare and insane Competition of men with each other, and on the Slaughter and Vivisection of animals—the search for unity on the practice of disunity—is an absurdity, which can only in the long run reveal itself as such.

I do not know whether it seems obvious to you, but it does to me, that Man will never find in theory the unity of outer Nature till he

reaches in practice the unity of his own. When he has learnt to harmonise in himself all his powers, bodily and mental, his desires, faculties, needs, and bring them into perfect co-operation—when he has found the true hierarchy of himself—then somehow I think that Nature round him will reflect this order and range itself in clear and intelligible harmony about him.

But I can say no more. I have dragged you by the neck, as it were, through a recondite and difficult subject; and even so I do not feel that I have by any means done justice to it. But it is possible, perhaps, that I have cast the germ of an idea among you, which if you think over it at leisure may develop into something of value.

**THE HUMANE STUDY OF
NATURAL HISTORY.**

By

J. ARTHUR THOMSON.

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THE HUMANE STUDY OF NATURAL HISTORY.

To each one of us the world of organic life appeals in a particular way. We are all spectators of the same great drama of life, but we occupy—by constitution, circumstance, and chance—different seats. Thus we are surprised, or even impatient, because our neighbour from his outlook does not seem to see things as we see them. But do we not make too much of the differences and too little of the resemblances, as Bacon said long ago. For the diversity is natural enough, considering the variability of man's moods and the complexity of the facts of life.

Diverse, however, as are our personal outlooks, it seems possible to reduce them to three: practical, emotional, and intellectual. Without involving ourselves in any obsolete and fallacious classification of human "faculties," it is possible and useful to speak

thus of the three main attitudes which men have occupied and still occupy towards the living world. Let us briefly consider these, that we may remind ourselves that each has its dignity and its naturalness, though all must blend in the worthiest life.

OUR THREE-FOLD RELATION TO ANIMAL LIFE.

(a.) *The Predominantly Practical Mood.*—It seems likely that man's first relations to living creatures were predominantly practical. He looked in order to do or undo; he knew for the sake of action; he named that he might quickly denote to his fellows what was dangerous or harmless, dreadful or precious. No doubt, from the first, there was thinking and feeling as well as expedient action; but it is likely that in early days man was neither very emotional nor very intellectual, but was especially practical, albeit in that dreamy, half-awakened sort of way which Æschylus has so finely portrayed in a well-known passage of his "Prometheus Bound."

Gradually, however, there arose the practical lore of huntsmen, shepherds, fisher folk, and

tillers of the ground ; gradually, under many side influences, there has evolved the manifold art of dealing with organic life in relation to the practical needs of man. It is here that Agriculture and Medicine, and how many other arts, find their roots, and Biology one of its foundations.

It is evident that this practical mood is necessary and natural. Without its results intellectuallism would wither, and emotionalism whine away. In fact, it has a dignity which it seldom claims.

Yet, when the practical mood becomes absolutely dominant, when things get into the saddle and over-ride ideas and ideals and all good feeling, we know the results to be vicious. The vices of the dominant practical mood are well known—baseness, belittlement, brutality. But it is equally true that there are other vices attendant on the dominance of the emotional and intellectual moods. Their condition of sanity is to be kept in touch with each other. The point, to put it concretely, is that the veterinarian is just as natural, ancient, and worthy as the philosopher. What one would wish is a fusion of ideals.

We cannot but have a great respect for the practical man, yet the problems of life are apt to seem simpler to him than they really are. The practical man elects to do, not know, but his practice may be more dogmatic than any dogma; he will away with all sentiment, though he professes to keep close to the facts of life; he cannot abide any theory—except his own; he distrusts all speculation, and will live, he says, in the *real* world, yet in so doing he may be naïvely hugging close to himself his own particular idealism!

I have just suggested that there can be no escape from theoretical difficulties by vowing to be wholly practical, but even the practical problems are far from easy, *especially* when considered *per se*. Let me take an illustration. It is surely a practical biological aim to conserve life rather than to destroy it. But one of the sad biological facts of to-day is the extermination of many beautiful and noble forms of life. We probably breed new species of Bacteria, but we exterminate bisons and beavers, and how many more. This is a practical problem, but very difficult.

We must grant that there is "a time to kill," for example, when our friend is under the tiger's paws. Not much seems to have resulted from the example of the Eastern saint, who in pursuance of his non-resistance creed yielded himself to the hungry tiger, in the hope that his gentle blood might dilute the tiger's fierceness. According to one version, at least, it only whetted the carnivore's appetite for more of the same sort. There is surely a time to kill.

But even a slight acquaintance with the records of naturalist-travellers, *e.g.*, in Africa and S. America, suffices to convince us of man's fell exterminating power, and makes us feel that there is surely a time to refrain from killing. It is only necessary to read Mr. Hudson's *Naturalist in La Plata* to be convinced of this. How is the balance to be struck?

We need not, of course, leave our own shores to find cases of the most careless irreverence of life. Thus, writing to the *Times*, Mr. Hudson notes that when a pair of hoopoes recently nested in a hollow tree at Southwick, they were allowed to hatch and partly rear their young, then religiously killed and stuffed!

One welcomes such constitutional expressions of opinion as Wild Bird Protection Acts, such practical expedients as the establishment of Reservation Regions, and such an organisation among sportsmen as the Boone and Crockett Club in the States, for all these express a desire to recognise and respect the rights of the creature. One welcomes, too, the efforts of influential men like Sir Wm. Flower, and even more a conscientious criticism of consumption on the part of many. But still it is very difficult. Let us simplify the problem a little by fixing our attention on snakes, which still bite the heel of progressive man. Is it well to be very enthusiastic for the extermination of venomous snakes in India? We are shocked to hear that they kill over 20,000 human beings per annum, though it is only fair to notice that this number represents but a small percentage of the population; and as it is said that they tend on the whole to cut off the stupid and careless, the question rises whether it would not be well—in respect of this—to leave snakes alone. Those who believe (I am sure I do not) that Bacteria have raised man to what some call

his present pitch of physical perfection by always cutting off the weakly and dirty and sluggish—(a thesis ably expounded in Dr. Berry Haycraft's *Darwinism and Race Progress*)—will probably believe that snakes have evolved the wisdom of the East. Indeed, I have heard a Deputy Surgeon-General, for whom I have all respect, say so. Should we not, therefore, leave the snakes to continue their good work?

But our friend's little boy hid his sweetmeats in a hole in the wall, and on seeking for them again was bitten, and after some severe suffering was soon dead. This pathetic personal tragedy rouses us again from the *laissez-faire* position, and we say "Death to the Snakes," and we offer rewards of so many annas per head. Yet when we find a wily native breeding the said snakes in a secluded corner that thereby he may bring the more heads and make many more annas, we wonder whether we or the snakes are doing most harm. And once more, when rats and vermin increase, as snakes decrease, we wonder whether we had not better have left ill alone?

But then, finally, we read in the *British*

Medical Journal, November 21st, 1896, that Surgeon-Major Rennie saved the life of a boy who had been bitten by a krait by injecting Dr. Calnette's anti-toxin preparation from immunised horse or donkey serum, and we wonder if science is to conquer after all? It is too soon to speak, but surely there is a seamy side here, too!

In some cases the issues seem fairly clear—disturb the balance of nature by destroying the natural enemies of the vole, and, weather permitting, you will have a plague of voles, and thereafter a vole commission—both expensive. But instead of the crusade against the voles it might have been wiser to have had no persecution of the voles' enemies. The moral to human affairs is not far to seek, viz., that one wrong breeds another, as has often been illustrated since the time of the plagues of Egypt.

I have ventured on this digression at the outset in order to make clear what is at least my conviction—that it is often far from easy to know what to do. Do the right, some one says. Truly, we are agreed about that, but what is the right in detail? The predominantly

practical mood is hardly sufficient to give answer.

(b.) *The Predominantly Emotional Mood.*— Quite different from that of the practical man is the mood of those who find in animal life a stimulus, not so much to action as to admiration, not so much to doing as to feeling. From the unknown first emergence of “the gentle-man” until to-day, the drama of animal life has not ceased to appeal to the human emotions. As man gained firmer foothold among rival organisms, the emotional tone, which had always been associated with his activities, rose into dignity as a distinct mood.

The herbs and the trees, the birds and the beasts, sent their tendrils into the human heart, claiming and finding kinship. From the old superstitious fear of the strange to the awe of Walt Whitman before the mouse, which “staggers sextillions of infidels”; from the ancient half-understood animal worship to the wonder of the Laureate who lingered lovingly over the life of the brook and exclaimed, “What an imagination God has!” from the irresponsible pioneer artist who etched the elk on the mammoth tusk down to Landseer;

from the sublimity of the Nature-Psalms to Meredith's Lyrics of the Earth ; from Mowgli in the jungle to Richard Jefferies in the English woods ; there is the same emotional keynote—different as the rhythms may be.

Just as before, this mood has its obvious virtues. It helps to keep our souls alive to the harmony hidden in the heart of things ; it is part of the salt of life. Yet it has its vices, and may, unruled, become morbid, mawkish, and mad. It expresses none the less a natural and necessary development of the human spirit, and is a needed counteractive alike of over-doing and over-knowing.

We must recognise throughout that the normal is a *via media* between pathological possibilities, that even benevolent soft-heartedness, as Von Hartmann observes, may be a very inconvenient quality, "as was illustrated by the forty-nine cats with which the good-natured young poet found himself blessed a year after he had interdicted the destruction of the first litter."

I may be mistaken, here as elsewhere, but it seems to me that the emotional mood, unless tempered by thought and tested in

action, is liable to be as vicious as any other loss of equipoise or disregard of the unity of life.

How gratuitous, for instance, is the doubt, frequently expressed of recent years, as to whether the drama of animal life is a moral spectacle. Those who have this doubt shudder at what they call the cruelty of nature. But it is well to make sure first that they *are* observing nature, and not themselves projected into it. If there is to be any shuddering, perhaps it might profitably restrict itself first to the cruelty of human nature, and to the grotesqueness of human impertinence.

I can hardly conceive of anything more mis-educational—to use the mildest possible term—than showing deathful experiments on animals to young folks, as is said to have been done in certain schools, but I would in all seriousness say that to teach a child that a flower is pained when pulled to bits, is a sin of the same degree. All the deadly sins have the same degree. By all means let the child come to feel naturally that it is a pity to pull a beautiful thing—a beautiful life—to bits without some good reason, but do not let us have any lies at the roots of our emotional culture.

At the same time, we must clearly recognise that just as the practical man has some justification when he recoils from science because, as he says, it is too theoretical, so the artist, poet, or man of feeling has some justification when he recoils from science because it is too analytic. He feels instinctively the involved loss of unity; he is accustomed to see things in their totality, and is vexed when this aspect is lost sight of. Thus you may have poets of evolution, like the late Miss Mathilde Blind, but hardly of dissection! In wider statement, the man of feeling is justified in saying, "though I could remove mountains, like the practical man, and though I could know all things, as the scientific man would, yet if I have not charity, I am as the tinkling brass and sounding cymbal."

(c.) *The Dominantly Intellectual Mood.*—It is plain that science is not germinal either in the practical or in the emotional mood. For though science has some of its roots in practice, and is saved from error by every touch with life, it is not practical either in main intention or in main result. Similarly, though emotion has influenced science for

good and ill, and though science has in turn given nutriment to emotion, it remains true that science is fundamentally non-emotional.

Darwin expresses the contrast between the scientific and the emotional mood when he speaks in one of his letters, rather pathetically, of the pleasure he had on one occasion in simply surrendering himself to the enjoyment of the flowers and birds around him, without for once asking how they came to be thus or thus.

The student of science seeks, not like the practical man to realise the ideal, but to idealise the real. He elects to know, not do. He would make the world translucent, not that emotion may behold the glimmer of the light which shines through, but for separate reasons, because of his inborn inquisitiveness, because of his dislike of obscurities, because of his longing for a system—an intellectual system in which phenomena are rationalised.

Biology only began as such, and at first very spasmodically, when men found leisure to try to think out the living creature, abstracting for the time all considerations of utility, and as far as might be all emotional bias.

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It has, like the other moods, its virtues of method and ideal. It is painstaking, patient, and precise; it is careful, conscientious, contriving; it aims at clearness, translucence, rationality; it will make a working thought-model of the organic world.

It has also its vices, of over-knowing, of ranking science above life, of ignoring good feeling, of pedantry, of monomaniacal muck-raking for items of fact. Yet it is a natural and necessary expression of the developing human spirit, and supplies the intellectual foundation, without which practice is merely empirical and emotion superstitious.

THE UNITY OF LIFE.

There are, then, these three main moods or attitudes of mind observable in human relations to animal life—practical, emotional, and intellectual. They find expression in doing, feeling, and knowing; in practice, in art, and in science; they may be symbolised by hand, heart, and brain.

They are all of equal dignity, for all are essential; and each is correlated to the others, for life is a unity. We do not suppose that

there *are* altogether separable faculties or nonsense of that sort, we do not say that there are *any* purely practical, or exclusively emotional, or solely scientific men ; we simply note the fact that a certain mood has often a temporary dominance, and that we can practically distinguish among ourselves the doers, the feelers, and the knowers. We all err in over-doing, *or* over-feeling, *or* over-knowing.

It is believed by most comparative physiologists, and, as far as I know, rightly, that the ears of many of the simpler animals are not hearing ears, but directive ears, important in balancing and equilibrating. It is such an equilibrating organ that we all need.

Thus my first thesis is simply that of the Unity of Life. Completeness of life is the condition of sanity, of body, soul, and spirit. It spells health, wholeness, holiness, as Edward Carpenter has said.

Contrariwise, non-humane practice, emotion, or science, arises primarily from a disruption of the Trinity, a denial of the Unity of Life. To be wholly practical is to grub for edible roots and see no flowers nor stars in life ; to

be wholly emotional is to become unreal and mad ; only to know is to deny our birth-right and birth-duty as social organisms, or, at the very best, to forget that our chief end is not merely to know God, but to enjoy Him for ever.

It comes to this, then, that we may be and are led astray—to varying degrees, of course—in three ways ;—by a predominance of the so-called practical mood, unrelieved by sentiment and untutored by science ; by a predominance of the emotional mood, unballasted by a knowledge of facts, untested by practical effort ; or by a predominance of the scientific mood, uncompleted in emotion, unchecked by practice. The particular problem before us is in regard to a department of science, and my main thesis—a commonplace to some, possibly nonsense to others—is that science for its own sake requires to be continually moralised and socialised, oriented, that is to say, in relation to other ideals of human life than its own immediate one of working out an intellectual cosmos.

Our science requires to be kept in touch at once with our life and with our dreams ; with

our doing and with our feeling; with our practice and with our poetry.

Synergy and sympathy are needed to complete a synthesis.

THE UNITY OF SCIENCE.

But we must now get nearer our specific subject and think for a little of the unity and harmony of the sciences. The concrete sciences are arranged conveniently in five Groups:—I. Chemistry; II. Physics; III. Biology; IV. Psychology; and V. Sociology. These disciplines, blocked apart for practical convenience, treated of in separate books, expounded by different teachers, are parts of one discipline, and have their ideal completeness only when inter-related. This is the ideal alike of the philosopher's stone and of most modern scientific synthesis.

Biology, the science of living organisms, is central, its foundations run down into Physics and Chemistry, its results run up into Psychology and Sociology. To ignore the foundations has been called the fallacy of transcendentalism, to deny the higher divisions of the hierarchy has been called the

fallacy of materialism. Perhaps we are better without these terms, the point being simply that the sciences are correlated, form one body of truth, and must be thus studied. This is, indeed, a familiar idea to students of Comte on the one hand, or Spencer on the other, and has been beautifully worked out from another position by Principal Caird in an address on "The Unity of the Sciences." But while the idea is easy to state, the ideal is hard to realise.

The living organism is a synthesis, whose secret has not been solved, but we are surely helped to understand it, on the one hand, by what we know of the relatively simpler chemical and physical phenomena, and also, on the other hand, by what we know of mind and of society. There are lights from below and lights from above, to shut out either means obscurity.

On the one hand, it is a materialism to ignore what is novel at each great step, to give a false simplicity to the higher phenomena by forcing upon them the categories of the lower. Life transcends mechanical categories, just as man transcends the categories of purely

animal Biology. On the other hand, it is, perhaps, equally fallacious to disregard the light which the study of the higher syntheses sheds upon the lower, which Psychology and Sociology shed upon Biology.

Kant said: "Giebt mir Materie, und Ich will daraus eine Welt schaffen." (Give me material, and I shall make a world out of it.) But is not the whole point in the second word, *me*—Give *me*?

There is a sense in which one uses the Amœba in order to explain man; but it is at least equally true that one needs man in order to explain the Amœba.

I cannot go further into these questions; it is perhaps enough to notice the matter of fact that such valuable conceptions as division of labour and evolution were first made clear in regard to human affairs, and were thence transferred to and verified in the study of organisms.

We also know as a matter of history that fresh life has repeatedly been given to Biology by the discovery of what may be called *a new contact*, where it met some other science. In the same way it may be said that contact

with Biology has quickened Psychology to new life.

In passing, I would allude to the probable future which is before the application of mathematics to Biology. The results gained by Francis Galton, Karl Pearson, Prof. Weldon, and others, lead us to hope for much.

Likewise, the importance of renewed contact between Philosophy and Biology is fairly obvious. Errors of both sides have probably resulted from lack of sympathetic union. And here I may refer those interested to my friend Mr. Sandeman's recently published volume—a tough mouthful—*The Problems of Biology*, in which from a philosophical point of view he furnishes a much needed criticism of the categories of modern Biology, and expounds the fundamental idea of the unity of the organism. (*Here followed in the lecture some concrete examples of the humane study of Biology.*)

To illustrate further what I would call the humane study of natural history, allow me to refer to the just published work on *Habit and Instinct* by my friend Professor Lloyd Morgan, of Bristol. It is full of

valuable and suggestive observation, all of a kind which leads on to something else, all of a kind which it is pleasant to think about.

Mr. Lloyd Morgan, instead of merely talking and thinking about instinct, as so many have done, set himself to definite experimenting, and may almost be said to have begun a new chapter in comparative psychology. Thus he incubated eggs of various birds in an incubator, and himself acted as their foster-parent. It is pretty to read how his young partridges would follow him about. Since the young birds saw no mother, and had none of "the advantages of education," their inborn or instinctive powers were studied in all their purity.

The researches I have just referred to have absolutely nothing of the non-humane about them, but that is only a negative virtue. They are positively humane for they respect the unity of the organism; more than that they are in their result important to both Biology and Psychology. Indeed, when carried on to man they come to be of social importance. I have a great admiration for Mr. Lloyd Morgan's work, and I hope I do not offend

against good taste when I note his personally synthetic position as geologist, biologist, and psychologist, as musician, and as head of a college. His work expresses himself. It may well serve as a model and encouragement to us all.

THE UNITY OF THE ORGANISM.

Bearing in mind these two ideas of the unity of life and the unity of science, let us in the third place think of Zoology in particular.

An animal comes within the field of our experience. As practical people we decide very quickly whether we mean or not to make further acquaintance with it, whether we may watch it or must kill it, whether we can eat it, or it us, and so on. Often prejudice is so strong that the story ends here, without any Zoology.

In other cases, however, the tendrils of the animal's life touch ours. It claims kin with us as part of the great bundle of life. We pause to wonder, to enjoy, even to love. And again it often happens that the story ends here—without any Zoology.

Biology begins as such when we begin to think out the plant or animal, when we ask the four great questions :—

- (1.) *What is this*, in form, structure and parts?
- (2.) *How does this live*, in its relations to the earth, in its relations to its fellows, in its internal workings?
- (3.) *Whence* came this, in its individual becoming, and in its ancestral emergence ; as an individual, and as one of a race?

And finally (4) *Why and how* is this in structure and functions, in development and pedigree, just as it is, and not otherwise.

(1.) The answer to the first question : *What is this?* asked again and again at different planes of analyses, comprises what is called morphology, which regards the organism in its static aspect, and studies form and structure.

In early times the answer was chiefly concerned with the external appearance of the intact creature, but Cuvier and Jussieu established the comparative anatomy of organs, Bichat and others disclosed the web of tissues, Schwann and others analysed down

to the unit elements or cells, and the work of recent years has been in great part concerned with the microcosm within each cell, and with the living matter or protoplasm itself.

In studying structure (Morphology) the methods are plainly,—observation, analysis, and comparison. We study external form and symmetry, always harmonious and beautiful in a natural wild animal. We work till we see the creature through and through as if it were transparent; we persevere till we see it as a great city—far excelling any city of ours—with regions which we call organs, streets which we call tissues, houses which we call cells. We work on till we see the intricate structure of each house—the furnishings and inhabitants of the cell. We return to the unity and compare organism with organism and detect relationships; we compile a census, and construct a genealogical tree.

Now all this—so dry perhaps in summary—is as some of you know well most interesting in detail, so captivating indeed that to many it is almost their whole life. It needs no fostering, it will submit to no hindrance: till

the book of life is closed, it is not likely to cease; it seems safe to say that there will always be inquisitive morphologists who must see into things. It is also quite essential, supplying as it does a solid foundation for further inquiries.

At the same time, it must be noted that it is partial, that it is not the whole of Zoology as some seem to suppose, that it has to do only with the static relations of animals, that for the morphologist the animal is *dead*.

Morphological Science appears non-humane when it fills the whole field of a man's life, it becomes fallacious when it dominates the mind till the life of the creature is forgotten, it does itself injustice when it becomes purely quantitative in its results, and it is out of place when it is prematurely forced on the young mind as an educational discipline.

Let us bow respectfully to the Cuvierian School, and pass on.

(2.) The answer to the second question: *How does this live?* forms what we call Physiology, the science of functions and habits, which considers the organism in its kinetic aspects.

In early times the answer was chiefly concerned with the external life and habits of the intact creature. But as the anatomists revealed the intricacy of the engine, the physiologists were bound to follow, and the easy-going unanalytic physiology of habit and temperament gave place to a study of the functions of organs. But Bichât again led the way to a deeper analysis, to a study of the properties of tissues ; and now we are face to face with the inner life of cells, and with the chemical changes associated with living matter.

You may remember how Clerk Maxwell as a boy had often on his lips the question, "*what is the go of this ?*" "*what is the particular go of this ?*" He was not himself much concerned with living creatures, but his was the physiologist's question. The physiologist has to do with function not form, with activity rather than structure. His methods are observation, experiment, and analysis. His result when achieved is that the organism is not merely seen through and through, but its workings are seen, in imagination I mean of course, the beating heart, the contracting

muscle, the phases of the cell, the up-building and down-breaking associated with the protoplasm or living matter. Nor is he concerned merely with the individual animal as an engine, for if he really understands his vocation he has to deal with the animal as an intact unity with habits and customs, inter-related with mate and family, with friends and foes, and with the great web of life all around.

Now it is evident that this is as essential as morphology, and as sure to flourish. It is liable to the same vices of pre-occupation with detail, of exaggerated analysis without corresponding construction, of losing the synthesis in the analysis. Like the morphologist, too, though in a different way, the physiologist is apt to forget that life is more than science. One must grant him the credit of sometimes thinking last of all of his own.

It is noteworthy, as Prof. Geddes has pointed out with great clearness, that morphology and physiology during the last hundred years or more have had a parallel and logical development — a gradually

deepening analysis—from organism to organ, from organ to tissue, from tissue to cell, from cell to protoplasm.

What Biology looks forward to, could firm foot-hold be found, is a parallel synthesis, an intellectual reconstruction of the organism which has been so laboriously taken to bits.

(3.) The third question is—*Whence has this organism come*, as an individual growing from an egg, as a species emerging from antiquity.

This two-fold study of becoming is comprised in the two sub-sciences of embryology and palæontology—"Geneology." You may remember how the geologists are spoken of in St. Ronan's Well, as "running up hill and down dale knapping at chucky stanes like sae mony road-makers gone daft," and a similar misunderstanding still persists in many minds in regard to the palæontologist. He is a dryasdust poring over antediluvian vestiges, a mere fossil-hunter, a burrower in the graveyard of the buried past. But this is a caricature. Surely we all recognise that the palæontologist is the historian of the times before history, the specialist on the rise and fall of

racés, the man above all others who can interpret the present in the light of the past.

So, too, the embryologist is seen aright when we recognise him as the specialist on child-study, on the childhood of animals, as the guardian of the Water-Babies, as, above all, the student of that great mystery which we call organic growth, the very idea of which is so important alike in our thinking and practice.

(4.) Lastly, comes the most difficult question of all. *Why and how is this organism what it is?* This is the study of causes, Ætiology. It centres around the idea of evolution, in regard to which we say much, but are sure of little, except that evolution is the modal explanation of the organic world, and is in part worked out by the selection of variations.

My whole point here is just this. There are four well-marked departments subordinate to Biology, viz., Morphology, Physiology, "Geneology" and Ætiology, but the organism is one. We do not fully understand a living creature, but we feel sure that in a very real sense it *is one*. The sound development of the various sub-sciences seems to me to depend on the continued and more thorough

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recognition of this—the unity of the organism. In other words, if there is to be a Biology at all, it must be a synthesis, not a mere sum, of the various sub-sciences.

THE OUTLOOK.

It is an impressive thing to stand by and calmly watch the succession of gifts laid on the altar of science. There are the well-finished offerings of those who have what seems to some of us so inestimably precious—the leisure to work thoroughly undisturbed; there are the half-finished offerings of the impetuous, and enthusiastic, and hard-driven; there are humble offerings which have involved years of self-denial; there are brilliant offerings which have meant but a few flashes of clear insight; there are tarnished offerings which have been gained illegitimately; there are heroic offerings which are received *in absentia* from those who have died to know; there are epoch-making offerings, like those of Darwin, which set the whole altar aflame. But altogether, I say, an impressive sight; altogether not one of which mankind has a right to be ashamed.

When we contemplate this immense stream of zoological work, the first impression is surely that of great admiration. If thereafter we begin to be critical we notice that some of the work is rather quantitative, and might have been dispensed with just yet, that a few pieces of work are foolish, that a few are merely polemical, that a few are ugly and do violence to the Unity of the Organism, not to speak of the Unity of Science and the Unity of Life.

On the whole, however, the great body of the work would, I think, be esteemed good by any wise judge, wise for science and wise for humanity. I do not know of any sufficiently wise judge, except Time, whose decisions are often very slow.

What I wish to be at is this. There is need for and justification for *all* honest biological work which recognises the three Unities, or, if this be too strict a test, for all work which is within its limits sound and sane. I cannot profess to believe that there is equal urgency for all kinds of biological work; perhaps the most urgent at present is what has been called Experimental Evolution Research; but it would be at once ungrateful and foolish to

depreciate any piece of able work because one thinks that the energy it represents might have been more profitably directed elsewhere.

It may be taken for granted, surely, that any really good piece of work on whatever line was in most cases natural to the worker, and simply had to come, and that to wish it had been on a different plane is to be like a child crying for the moon.

But I have not yet got quite to my point, so anxious am I to be just to myself and to my fellow-workers. My point is this. There are some pieces of work which seem to be inhuman, or, as I should prefer to say, which violate all the Unities. Their gain is counter-balanced by the involved loss. Then there are pieces of work which are humane, to the extent that they violate none of the Unities. On the highest plane, there are pieces of work which are positively humane—they tend to develop the Unities.

It is certain that large conceptions such as Evolution, Selection, Heredity have dominated and unified years of research and hundreds of memoirs. Is it really vain to look forward to years of research and

hundreds of memoirs dominated and unified by the conception of the three Unities?

AN APOLOGY FOR BIOLOGY!

Let us suppose Biology arraigned before the bar of Humanity,—as it should, I maintain, constantly feel itself arraigned, the lines of defence might be briefly stated thus:—

(1.) First, that it is, like the other sciences, a natural and necessary expression of the human spirit, at once a development and a discipline of man.

(2.) Second, and “without prejudice,” that it is justified by practical results. In spite of many mistakes, it *has* made important contributions in relation to human health, the supply of food, the use of animals, and much else. Without prejudice, we must say, since we cannot, for a moment, allow that a science as a science should ever submit to the practical man’s canon which makes *immediate* utility a stringent criterion of worthiness.

(3.) Third, that while the partial pursuit of certain paths may sometimes have dulled or even played false to healthy emotion, the general result of Biology is to deepen our

wonder in the world, our love of beauty, and our *joie de vivre*.

(4.) Fourth, that it has partially worked out certain general conceptions of life and health, of growth and development, of order and progress, above all, of Evolution, conceptions which are not only attempts to see more clearly what is true, but which make for deeper feeling and for the betterment of life.

Addressing a representative jury, before whom I happen to be the counsel for the defence, I admit that Biology has no unblemished record, nevertheless I ask confidently for a verdict in its favour on the general ground that with all its faults it has contributed nobly to the *ascent of man*.

A BASIS OF CRITICISM : AND A SUMMARY.

Can we not reach some foot-hold on which, as humanitarians, as lovers of animal life, as scientific thinkers, teachers, and students, we may stand firmly, facing the tide of research and the spray of fashion, opinion, and controversy. To indicate this foot-hold and to rise above *particular* criticisms to a general basis of criticism has been the object of this

paper. The desired foot-hold is in a recognition of the "*Three Unities.*"

(a.) The first unity is *the unity of life*. By this we mean that a whole sane life implies a recognition of the Trinity of knowing, feeling, and doing, of brain, heart, and hand. We cannot hope to have these three sides of our nature all strongly developed, or even perfectly equilibrated, but we must strive to be keenly aware of the three sides.

The solely scientific man is apt to dislike his very practical brother, and he instinctively recoils from sentiment. But he is bound to try to understand the other positions, to see them as correlates of his own, and to mistrust his own because it is partial.

The dominantly emotional type recoils from the scientific and the practical alike, but when the emotionalist talks about the lust of knowledge, he betrays at once that he has never known the passion of science.

The purely practical people likewise fail to understand, and therefore dislike, both the scientific and the sentimental. It can only be deplored that they have let two of the lights of life die out.

There is no room for any bias; the solely scientific, the exclusively emotional, the purely practical, are *all* unnatural and vicious. And though it may be said that these extreme one-sided types are rare—which is a matter of opinion—this does not affect our argument which applies not merely to types of men, but to lines of conduct or thought or feeling, in which, for the time being, one attitude has been allowed to assume dominance. The various sins of human relations to animal life—sins of cruelty, of ignorance, of nonchalance—depend primarily on a disruption of the Trinity of doing, feeling, and knowing. More positively, the healthy development of Biology requires that the science be continually moralised and socialised.

(b.) The second unity is *the unity of science* or of knowledge. The sciences in the broadest sense form one body of truth. Biology stands midway between Physics and Chemistry, beneath it, and Psychology and Sociology, above it; there are lights from beneath and lights from above; to shut out either means obscurity. Or, again, if science be at best but “a broken mirror” of the

world, how much we need the help of the philosophers!

(c.) The third unity is that of the organism. We have so many questions to ask, each so difficult, that in our asymptotic search for answers we are apt to forget *the unity of the organism*. What is this as an entire structure and in its minutest part? How does it live? Whence came it as an individual and as a race? How is it what it is and not otherwise? These are the important questions, and the answers become sub-sciences of morphology, physiology, and so on, each again sub-divided in endless specialism.

All are necessary, but their virtue is surely in great part lost when they are not synthetised, when the specialist remains like a beetle in a rut, the sides of which form the horizon.

As a result we have many intellectual vices—vices of ignorance (of other subjects), vices of neglect (of other workers), of pre-occupation with trivial detail, of purely quantitative accumulation of items of fact, of exaggeration due to lack of perspective, of mere necrology. In short, biology becomes vicious when it ignores the unity of the organism.

To sum up, there are a certain number of 'isms which we scornfully call faddisms. These express a loss of perspective—intellectual, emotional, or practical. Each has usually its virtue, each is as surely vicious. We need not scorn any one in particular, since the chances are that we are the victims of another! At the same time, we see that the line of progress is to study the psychology of these 'isms, to recognise them as reactions against some denial of one or other of the three unities, or of a fourth, which I have not mentioned; to see them, also, as *natural* exaggerations, to be lamented always, but to be pardoned in proportion as they are understood.

THREE QUESTIONS.

With an outlook at once towards peace and towards progress, I would suggest that we biologists should oftener ask ourselves three questions.

(1.) To the biologist, as a biologist, the question is: Am I in my thinking and teaching and research, recognising, respecting, and doing no violence to *the unity of the organism?*

Am I studying it *as I would have myself studied*? A brilliant philosopher wrote a paper recently on the supposed uselessness of the soul; has not the biologist sometimes need to read a paper on the supposed uselessness of the life?

(2.) To the biologist—as a student of science—the question is: Am I in my thinking, and teaching, and research, recognising, respecting, doing no violence to the *unity of science*. Am I recognising other bodies of thought *as I wish they would recognise mine*. Thus it seems almost self-evident that most of the so-called conflict between science and theology would have been obviated if the disputants had taken the trouble to recognise their mutual positions, and to keep from mixing up two quite distinct sets of terms—material and spiritual—in their respective discourses. The long spun-out controversy between materialism and vitalism illustrates at least the intellectual disaster of science divorced from philosophy.

(3.) To the biologist, *as a man*, the question comes: Am I in my thinking, teaching, and research, recognising, respecting, doing no violence to *the Unity of Life*? Does this piece of work mean much to other workers,

to men? Is it quite consistent with healthy feeling and good conduct? *Does it violate nothing in my birth-right and birth-duty as a social person?*

FINIS.

I feel that there is something else to say—much else indeed—but one thing in particular. I do not myself know how to say it, but I came across a sentence the other day which indicates what I should like to know how to express. It is from a book by Professor D. G. Ritchie entitled “Darwin and Hegel,” and reads as follows:—

“The ‘truth’ of our separate selfhoods is only to be found in our ultimate unity, which religion calls ‘God,’ which Ethics calls ‘goodness,’—a unity which is not the abstract ‘One’ of the Neoplatonist, but an organic unity realised in a society which is not a mere aggregate of individuals, but a spiritual body animated by that love which is the highest religious conception of Deity.”

**THE
TREATMENT OF PRISONERS.**

**By
WILLIAM DOUGLAS MORRISON.**



THE TREATMENT OF PRISONERS.

I SUPPOSE most of you remember a sarcastic utterance of the present Prime Minister with respect to what his great political opponent described as the Concert of Europe. Lord Salisbury said that it was unfortunately an assemblage in which every performer was playing a different tune. In political matters I am afraid that there is still too much truth in this somewhat cynical epigram. But, fortunately for humanity, politics do not cover the whole field of civilised life. Outside of politics there is on many points such a thing as the Concert of Europe. The Concert of Europe, as I will interpret the term, means a consensus of international opinion in a given direction or on a certain definite subject. Such a consensus of civilised opinion must always carry immense weight. An expression of national opinion may be

biased and vitiated by national prejudice, or national circumstances, or national idiosyncrasy. But when an opinion becomes international, when it becomes the common conviction of the vast majority of civilised mankind, then it comes home to us with overwhelming force and power. Now if you consult the opinion of almost all the most experienced writers, jurists, administrators, and statesmen among European communities, you will find all of them say without exception that our present methods of penal administration are to all intents and purposes a failure. It is not from one country that we hear this complaint. We hear it from every quarter of the civilised world. We hear it from France, we hear it from Italy, we hear it from Germany, we hear it from America, we hear it among ourselves. It is not long since one of the most eminent of Her Majesty's judges said that our existing system of penal laws was a hundred years behind the times, and we have it on the authority of commissions and committees appointed by the Government and Parliament that the existing methods of carrying out these laws not only fail to reform

offenders, but produce a deteriorating effect upon them. You will say that this is exceedingly strong language ; and so it is. But it is the exact words used by Lord Kimberley's Commission in 1878, and repeated by Mr. Herbert Gladstone's Committee in 1895. You have, therefore, to face the fact that at the present moment your penal methods not only fail to do the offender any good, but on the contrary, do him an immense amount of harm.

Whether we agree with the *Times* or not, it will be admitted by everybody that it is a very powerful organ of public opinion in this country. The *Times* newspaper represents the average opinion of the ruling classes. It is not without importance to know what a newspaper like the *Times* thinks of our existing penal machinery. With respect to this machinery, the *Times* says that "it is difficult to resist the impression after reading the testimony of experts, that the present remedies, in the shape of prisons, are little better than quack remedies. Either they resemble the potent drastic doses of a barbarous age, which killed or injured the

patient more often than they cured him, or they have as little effect as the panaceas of a quack who prescribes some coloured water or fanciful grotesque concoction for the worst diseases."

What are the remedies, or rather what is the remedy for crime, which the *Times* denounces in such vigorous language. It is an immense machine, ladies and gentlemen; and this immense machine is constructed almost entirely for the purpose of inflicting pain. It has been believed in the past, and is believed now by large sections of people, that if you inflict a sufficient amount of pain upon the person who violates the law, you succeed in frightening him from transgressing in the future, and that you also frighten others from doing as he has done in the past. The reason why this huge machine for inflicting pain exists then, is because it is believed to be a useful instrument for frightening people. If this pain-producing instrument had the effect of frightening people, and of keeping them within the limits of the law, all would be well. It would serve its purpose in the same manner as a steamship serves the

purpose of transporting passengers from one part of the world to another, or as the power loom succeeds in producing vast quantities of cotton cloth. But supposing your steamship will not take you to your journey's end, and supposing your power loom will not produce a yard of cotton cloth, what would you say? You would immediately tell us that these machines are useless. You would immediately say that they do not fulfil the purpose for which they were made. You would say, we want something which will work, we want something which will do the thing it was made for; we don't want a machine which always breaks down whenever it is put in operation.

Ladies and gentlemen your machine for inflicting pain has broken down in the same way as a steamship which won't stir out of dock, in the same fashion as a power loom which won't weave a yard of cloth. Some people will tell you that it has broken down because it does not inflict a sufficient amount of pain. If the knives of this machine were made still sharper, if they were constructed to cut still deeper into the flesh, if the agony

was made still more acute, then it is said the object of the machine would be secured. People who reason in this way always remind me of the celebrated Dr. Sangrado. You will doubtless remember that this worthy was a great believer in bleeding for all sorts of diseases. No matter what a man was suffering from Sangrado was convinced that a free application of the knife would cure him. No amount of facts or arguments could shake him out of this conviction. The whole art and practice of medicine consisted in bleeding your man. The result of Sangrado's method was that his patients died like flies. But this appalling fact did not shake his faith in bleeding in the very least. On the contrary, he said the real reason the people died was because they had not been bled enough. Ladies and gentlemen, the only effect of severe punishments is to still further humiliate men who are already humiliated, is to still further degrade men who are already degraded, is to still further demoralise men who are already demoralised. These severities instead of having the effect of making men better have the effect of making them worse.

If the only result of your severities is to make a bad man worse and a weak man weaker, these severities must be condemned as useless no matter what test you care to apply to them. It is not to more harsh methods of treatment that we must look for light in dealing with the criminal population.

The more I examine the causes which produce the criminal population, the less belief I have in severity of treatment as a remedy for crime. Here is a child of the slums. He has been born and bred amid the most wretched, moral and material surroundings. He is the offspring of degenerate and degraded parents. All his life has been lived in a polluted atmosphere of vice and crime. He becomes a petty criminal in youth. He develops into a hardened criminal in maturity. We read of his misdeeds in the newspapers. Of his past we know nothing, except the number of times he has been in prison and penal servitude. We despair of such a man. People instinctively say—No punishment can be too severe for him. Ladies and gentlemen, what are the causes which have made this man such a hardened wretch?

Is it not as plain as day that these causes are the wretched circumstances of his birth and the equally wretched circumstances of his upbringing? In apportioning responsibility for crime, let us be just. Let us not throw the entire blame on the individual. Let us recollect that there is such a thing as collective responsibility. If the condition in which many children are born into the world and have to live in it are such that they have no social opportunities whatever, are they not likely to turn their backs on a society which has turned its back upon them? The reason these people are criminals is, because they have had no chance in life, no social opportunities. Will your punishments open out a chance for them? Will a prolonged course of severities and degradations confer the virtues of industrious and orderly citizens on these unhappy men? On the contrary, the more harshly you punish them, the more you reduce the human element which still flickers in their hearts. The more you punish them, the more certainly do you doom them to the awful existence of a habitual criminal. In his day, John Bright said a great many true things.

John Bright once said—Force is no remedy, and, as far as the criminal population is concerned, this remark is literally true. Force, in the shape of punishment, no matter how severe you make it, will not keep down crime. If the penal laws of the past teach us anything, they teach us that crime cannot be put down by mere severity. Consult the Statute Books, and you will find that hanging, branding, burning, mutilation, used to be the punishment for offences which are now dealt with by a petty fine. Did these atrocious punishments put a stop to the crimes they were directed against? We know, as a matter of fact, that they did nothing of the kind. Offences against the criminal law were just as rife when these penalties were in force as they are to-day. These penalties had no effect whatever in diminishing the volume of crime. These penalties had no effect, because crime springs from conditions which punishment cannot touch. It springs from disorders in our social system, and until these disorders are healed or alleviated, crime will continue to flourish in our midst, no matter how severe and stringent you may make the penal law.

Some of these disorders consist of physical or mental infirmities; some of them consist of economic hardships and vicissitudes; and some of them in the low standards of life and conduct which prevail in our midst. The true method of diminishing crime is to pluck it up by the roots. And the only way to pluck it up by the roots is to alleviate the social disorders by which it is produced. It is to social remedies, and not to penal legislation, that you must look for the radical treatment of crime.

I do not wish you to infer from this that no good can be got out of a better method of penal legislation and penal administration. I believe, on the contrary, that the problem of crime would be very much minimised if we had better penal laws and a better prison system. At the present time the most urgent need in connection with the penal law is to increase the number of substitutes for imprisonment. We are far too fond of putting people into prison for petty offences. In this respect I freely and gladly admit that matters are mending. Imprisonment is not nearly so much resorted to to-day as it was even twenty

years ago. Substitutes for the prison in the shape of fining, sureties, educational institutions for juveniles, and probation or admonition for first offenders, are being more and more used by judges and magistrates. But there is still room for improvement. The existing substitutes for imprisonment might be made more elastic. They might be largely developed. The number of these substitutes might be increased. We might have a dozen alternatives to imprisonment instead of only four or five.

I urge the importance of substitutes for imprisonment because it has been proved that these substitutes are much more effective remedies for crime than the silence, solitude, and monotony of the prison cell. I do not wish to burden your minds with figures. But all statistics show that offenders who have been convicted but not imprisoned are much less likely to offend again than men who have been sent to jail. They are much less likely to become habitual offenders and to swell the ranks of the permanent army of crime. These facts are proved by the returns relating to the operation of the First Offenders Act in England

and the returns relating to a similar Act in Belgium. No doubt these Acts have not been in operation for long, and it is possible that our opinions with respect to them may have to be modified by the light of larger and fuller experience. But they promise well. And there is every reason to believe that they will continue to work well.

Prisons contain a very large number of juveniles under the age of twenty-one. Most of these young people are the inhabitants of towns. Many of the offences for which these juveniles are at present committed to prison do not imply the existence of any deep-seated criminal propensities. They are in many cases mere ebullitions of youthful folly. They are transitory and not permanent elements in the character. As these young people grow older these follies pass away. In many cases of this character it would be a great boon if we had some such penalty as forced labour without imprisonment. Penalties of this kind exist in some continental penal codes. In some cases the working of these penalties is not all that could be desired. Still they embody a sound principle, and I see

no reason why a properly organised system of forced labour, without imprisonment, should not succeed. As a matter of fact you have this principle in operation at the present moment in your day industrial school system. Most of the children in our day industrial schools are committed to these institutions by the magistrates. The children are detained in them from eight o'clock in the morning till six o'clock at night. Of these schools as a whole the late inspector says that they are without exception going on well and do really good useful work at little expense to the Treasury. It is always a pleasure, he continues, to go into these schools, and to see the order apparent everywhere, and the children almost invariably looking bright and cheerful. If compulsory detention and compulsory labour is so successful when applied to children committed to day industrial schools, there is considerable reason to believe that a system on somewhat similar lines would be equally successful if applied to juveniles convicted of certain kinds of petty offences. Children of this class are as a rule the product of large cities, and it is in large cities that

some form of compulsory labour, without imprisonment, could be most easily applied. If a penalty of this nature became a part of the criminal law, and was fairly successful in operation, it would possess many distinct advantages. It would still further reduce the number of juveniles who are at present committed to prison. It would be an alternative to imprisonment in cases where the offender or his parents were unable to pay a fine.

I also incline to the belief that an extension of the probation system which exists in several States in the American Union would be of great value in dealing with many classes of juvenile offenders among ourselves. In some of these States when a juvenile is convicted before the magistrates, he is handed over to an official, who is called a probation officer. If it is found that the juvenile has a home and that the home is not altogether a bad one, he is returned to his parents, but he is kept for a certain time under the supervision of the probation officer. One of the results of this system is that the juvenile remains under the parental roof and in the midst of natural

surroundings. All experience shows that a very indifferent home is better for the future welfare of the young than the best of institutions. Another important consideration is that this system of supervising the child under the parental roof is very much cheaper to the community. At the present moment our corrective institutions for juvenile offenders in England and Scotland are costing about half a million pounds per annum. Under a system of home supervision a good deal of this expense could be cut down, and I believe with better results.

Another useful method of dealing with offenders is to combine fining with imprisonment. According to the existing provisions of the criminal law an offender who is fined, let us say twenty shillings or twenty days' imprisonment, must pay the whole amount of the fine, even if he has spent five, ten, or fifteen days of the alternative sentence in prison. It very often happens that a convicted man or his family is unable to collect the money for the fine till he has spent a certain time in prison. In cases of this kind the sentence, instead of being a penalty of twenty

days or twenty shillings, becomes a sentence of ten or fifteen days' imprisonment and a fine of twenty shillings in addition. In other words, the severity of the sentence is increased, as the case may be, one-quarter, one-half, or even three-quarters, owing to the temporary poverty of the offender. In some cases it may be increased even more, but in every case it is increased when a portion of the alternative sentence of imprisonment has been served before the fine is paid. When a magistrate passes a sentence of so many shillings fine or in default so many days' imprisonment, it is not his intention that the convicted person should be imprisoned part of the time and likewise fined the full amount. But under existing statutes the magistrate has no option. He is powerless to prevent a mode of punishment from being inflicted which he did not decree, and which is more severe than the punishment he did decree.

It would be easy to remedy such an anomaly in the criminal law. The amount of imprisonment endured should count towards the reduction of the fine. If this simple expedient were adopted a man who is sentenced to a

fine of twenty shillings or twenty days' imprisonment would have his sentence reduced by one-half on payment of one-half of the fine. Assuming that the punitive equivalent of twenty shillings is twenty days' imprisonment, it is only reasonable and just that the payment of ten shillings should diminish the duration of imprisonment by ten days. This was the conclusion arrived at by a departmental committee appointed by Sir George Trevelyan, when Secretary of State for Scotland, to inquire into the best means of dealing with habitual delinquents. The report of the committee states that "prisoners committed to prison in default of payment of a fine should be permitted to work out their sentences by a combination of fine and imprisonment. It should not be necessary for them, having worked out half their term of imprisonment, to remain in prison for the full term unless they pay the entire fine. They should be liberated on any day of their imprisonment on payment of such proportion of their fines as the term of imprisonment still to be undergone bears to the entire sentence." "We are informed," continues

the committee, "that this system was at one time prevalent in Scotland, but it was given up because it was found to be illegal."

As an illustration of the hardships of the existing law the committee mention the case of a woman who was sent to Greenock prison for thirty days in default of payment of a fine of forty shillings. After she had been twenty-one days in prison her husband died. Her husband belonged to a burial society. In order to procure her liberation her friends borrowed forty shillings on the security of the sum she was entitled to from the benefit society, and the fine was paid. "Had that woman when convicted," says the report, "possessed forty shillings she would not have gone to prison at all. But being moneyless at the time of her conviction, she had ultimately to expiate her offence by payment of the full fine imposed, and three weeks' imprisonment into the bargain. Now the law in imposing a fine as a penalty for an offence, and prescribing imprisonment only in default of payment, evidently meant to mitigate and not to aggravate the punishment."

The Scotch committee, with the thoroughness which characterised all their proceedings, put their suggestions to a practical test. Mr. Napier, the governor of Greenock prison, received five pounds, with instructions to apply it in illustration of his scheme. The following are the cases with which he dealt :—

“ W. J. C., a case of assault, committed for five days in default of payment of seven shillings and sixpence. After being three days in prison succeeded in raising three shillings, and the balance of four and sixpence being provided out of the fund, he was liberated, and two days of his imprisonment was saved.

J. S., a case of assault, committed for ten days in default of payment of a fine of twenty shillings. After five days' imprisonment raised ten shillings, and the balance being paid out of the fund, five days' imprisonment was remitted.

E. M., another case of assault, committed for twenty days in default of payment of a fine of forty shillings. After five days' imprisonment raised thirty shillings, and the balance being paid out of the fund, fifteen days' imprisonment was remitted. At a cost, therefore, of twenty-four shillings and sixpence

to the fund, forty-three shillings was collected in the shape of fines which would never otherwise have been got, and the State was saved twenty-two days' maintenance of a prisoner in jail. Mr. Napier thought that it would be waste of money to continue the experiment, as to secure it full justice it would be requisite that the system should be generally known. But he expressed his belief that if it were known that less than half the fine imposed would be accepted, a large number of prisoners, probably one-half, would take advantage of it."

One of the immediate advantages of increasing the elasticity of the criminal law in the direction of combining a fine with imprisonment would be to reduce the proportions of the prison population. According to the Scotch committee's report, close on 35 per cent. of the prison population in Scotland are incarcerated because of inability to pay in full the fine imposed upon them. If, as is estimated, one-half of these prisoners took advantage of a provision which enabled them to reckon imprisonment as wiping out a part of the fine, the prison population would

be diminished to this extent. Inasmuch as each prisoner costs the country twenty-five pounds a year for maintenance, a decrease of the prison population means a corresponding decrease of public expenditure on penal establishments. A reduction of the average daily prison population to the extent of one thousand ultimately means a reduction of expenditure on prisons to the extent of twenty-five thousand pounds per annum or thereabouts. This is a consideration not to be lost sight of in estimating the advantages to be derived from adding to the elasticity of our present methods of imposing and collecting fines. It is also to be recollected that the additional fines collected, if the system here advocated were in operation, would amount to a very considerable sum. This sum would also go towards reducing criminal expenditure.

In short, the proposal to combine fining with imprisonment, instead of merely using the one as the alternative of the other, as is done at present, is in the happy position of possessing a maximum of advantages with an almost entire absence of corresponding defects. These benefits may be summed up as con-

sisting of a reduction of expenditure on crime, a reduction of the number of people shut up in prisons, a rational adjustment of substitutionary penalties, and a diminution of punishment unaccompanied by a decrease of social security.

I will now mention another point. In these days we hear a very great deal about long sentences and the evils of long sentences. Sir George Trevelyan's Committee, after examining a large number of experienced witnesses, arrived at the conclusion, to use their own words, that long sentences of imprisonment effect no good result, and they say that to double the present sentences would not diminish the number of habitual criminals. As soon as punishment reaches a certain point, whether in intensity or duration, it has such a damaging effect on the prisoner that he is unfit for social life when released, and has, as a matter of necessity, to fall back upon habits of crime.

Long sentences strike the imagination more than short sentences, but in my opinion the abuse of short sentences is at the present moment as great an evil as the abuse of long

sentences. According to the latest returns 160,000 cases, in round numbers, were committed to prison in England and Wales in the year 1895-6. Of these cases considerably more than a third were sentenced for a week and less—61,912. Now it is very probable that under a proper system of penal law most of these 61,912 cases need never come to prison at all. In imprisonment, to use a French expression, it is the first step which costs. A very considerable number of these 61,000 cases would consist of first offenders. If we want to keep down habitual crime we must do our utmost to keep the first offender out of prison. Over and over again I have heard old and hardened criminals say—If I had not got that three days or six days when I was a boy how different my career would have been. Some people will tell you that they do not think the prison brand means much as a hindrance to an ex-prisoner's future life. In this opinion I think they are mistaken. I believe that the prison brand is more or less of a detriment to every man. In a very considerable number of cases you will find that the ex-prisoner seeks the company of those who have been in the

same plight as himself. A bond of sympathy exists between them. Many an ex-prisoner seeks the company of criminals, not because he is fond of the company of criminals, but because he knows the past cannot be thrown in his teeth. It is not pleasant to be told that you are an old jail-bird. The ex-prisoner is spared this uncomfortable feeling so long as he makes ex-prisoners his associates. The prison, in fact, has the effect of creating what one might fairly describe as a criminal caste. A sort of ostracism by the rest of the community unites this caste in common bonds of fellowship and sympathy. The members of this caste have suffered together, have common experiences, common recollections, a common ground on which they all stand. That common ground is the sinister fact that they have all been in prison. One of the supreme aims of penal law should be to keep down the numbers who belong to this caste. It is useless to deny that this caste is a standing danger to the community. One of the most effective means of keeping down the criminal caste is to keep people out of prison as long as you possibly can. The most effective

method of doing this is to make the largest possible use of substitutes for imprisonment.

I now come to the manner in which criminals should be treated when they are committed to prison. If the object of imprisonment is to protect society and to prevent the offender from returning to prison, you must not subject the prisoner at every turn to meaningless and unnecessary degradations. He is, as a rule, degraded enough before he enters the prison cell. Certainly, if you want to reform him, you will not attain your purpose by subjecting him to the operation of a code of regulations which are calculated to extinguish every spark of humanity he may happen to possess. The late permanent Under Secretary of State for the Home Department saw this obvious fact quite plainly. "I regard," he says, "as unfavourable to reformation, the status of a prisoner throughout his whole career; the crushing of self-respect, the starving of all moral instinct he may possess, the absence of all opportunity to do or receive a kindness, the continual association with none but criminals, the forced labour, the denial of all liberty. I believe that the true

mode of reforming a man or restoring him to society is exactly in the opposite direction of all these." The Committee of Enquiry, before whom these remarkable words were uttered, endorse them, and say in their report: "As a broad description of prison life, we think that this description is accurate."

As a remedy for this unsatisfactory state of things, the Committee suggest that the prison system should be made "more elastic, more capable of being adapted to the special cases of individual prisoners; that prison discipline and treatment should be more effectually designed to maintain, stimulate, or awaken the higher susceptibilities of prisoners to develop their moral instincts to train them in orderly and industrial habits, and wherever possible to turn them out of prison better men and women, both physically and morally, than when they came in." This may be accepted as an excellent ideal. The question is how is this standard to be attained. It would be impossible with the limited time at my command to go into details upon this point. But I believe an immense step forward could be taken in the realisation of this ideal of prison

treatment if prison discipline were made as far as possible synonymous with industrial discipline, and if prisoners when under detention were treated in much the same manner as an employer treats his workmen. I had an interesting letter the other day from Mr. Herbert Spencer on this subject. Mr. Spencer, as most of you are aware, dealt with the subject of prison reform more than forty years ago, and I am glad to say that he is as deeply interested in the question as ever. In his letter to me Mr. Spencer says: "I am glad to observe that you put in antitheses the industrial mode of treatment and the militant mode of treatment. I had not myself observed that the system now in force is a militant system appropriate to a militant State, and that the system which I have myself advocated, and which your experience leads you to advocate, is the system appropriate to an industrial State. I wish that people could be made to pay attention to the evidence, but when men are once wedded to an idea, no evidence has any effect upon them."

One of the reasons urged against industrial discipline is that it would not be severe enough.

This, ladies and gentlemen, is an illusion. The severest task to which you can put the average prisoner is a task in which he will be compelled to make an intelligent use of his hands and his head. Unproductive hard labour, as it is called, does not involve any intelligent exercise of either hands or head. In reality it is not nearly such a severe ordeal as labour which demands the exercise of a certain amount of sense and skill. In addition to this the consciousness of having done a useful day's work has an elevating effect upon a man, and on the other hand the knowledge that all his labour has been wasted has a depressing and degrading effect upon him. It is possible that half a century ago when the standard of education and the standard of life was much lower among large sections of the population than it is to-day, that degrading methods of prison treatment did not cut so deep into a convict's soul as they do now. But it may be taken as a principle of penal treatment which admits of no exception that in proportion as the standard of life is raised in the general community the standard of prison treatment must be correspondingly

raised. If this obvious principle is overlooked you make the contrast between prison life and free life so great that the sense of human dignity in a prisoner is completely extinguished and he becomes when he is liberated a perpetual enemy of society.

But with the best of systems there is a residuum. What are you to do with them? What are you to do with the man or woman who cannot help getting into prison? It is distressing to see such cases. Perhaps if we looked far enough back into the past history of these unfortunate creatures we should discover that their life has been a sad one from the very beginning. We should see that they have had no chance. We should probably find that they are the victims of hereditary infirmities of body or mind, or that their lot has been cast in such unpleasant places that it is almost impossible for them to do well. Anyhow here they are in our midst. Imprisonment has no effect upon them except for evil. To send these people time after time to penal servitude is far too severe an ordeal. The public conscience is decisively opposed to it. In such circumstances, what

is to be done? I believe the only satisfactory method of dealing with the small residuum in the population, who are hopelessly unfitted for the strain and struggle of competitive life, is to confine them in some sort of industrial settlement. In this settlement the inmates would be detained for an indefinite time. They would be detained in fact until some competent tribunal decided that they were fit for liberty. The treatment of the inmates would be mild in character. It would have to be recognised in dealing with them that they were largely the victims of an evil fortune. If I may use the expression, asylum treatment, rather than penal treatment, would be the appropriate method of dealing with them. If this method were adopted, the public mind would feel at ease, even if these people had to be confined in the industrial settlement for a considerable time or an indefinite time. This seems to me to be the only method of dealing with the hopeless residuum.

Ladies and gentlemen, I must now bring this address to a close. I feel that I have only been able to touch the fringe of a great subject. The conditions which produce crime

and the treatment of the criminal when he is produced are a vast and complex question. In fact if we look at it long enough we shall see that it is only on one branch of the great social problem which is at present confronting the civilised world. We shall not solve the problem of crime or alleviate its intensity until we have made some progress in solving many of the other social difficulties with which it is inextricably bound up. Yet it is a satisfaction to feel that every step forward in the path of genuine social reform renders the problem of crime less difficult to solve. All who are labouring for better conditions of existence for the workman, the woman, and the child, are at the same time engaged in diminishing the proportions of crime and in reducing the number of unhappy creatures who spend the best part of their existence in the gloom of the prison cell.

**SUGGESTION ;
ITS PLACE IN MEDICINE AND
SCIENTIFIC RESEARCH.**

BY

DR. J. MILNE BRAMWELL.

SUGGESTION ; ITS PLACE IN MEDICINE AND SCIENTIFIC RESEARCH.

SUGGESTION has ever played an important part in medicine. In earlier and more superstitious times the priest or saint was the physician ; suggestion was administered in concrete form through the medium of saintly relics, or holy wells, and the cure was ascribed to Divine agency. As superstition decreased, belief in the curative power of saintly relics diminished, and the cures which were said to have been wrought by their means were usually looked upon as idle tales. Still later, science pointed out how every function in the human body could be influenced by fear, hope, and other emotional states ; then the cures we are referring to were admitted to be possible, while the saintly relics were regarded simply as the means by which the emotional states were evoked.

In 1839, as the result of the researches of Sir Henry Holland, the action of the mind upon the body was still further realised. He drew attention to the fact that, though the influence of the emotions upon physical conditions had long been the subject of study, the effects of the consciousness, directed by distinct voluntary effort to particular parts of the organism, had been almost entirely overlooked. In his opinion many of the functions, and all the sensations of the human body, could be influenced by voluntarily fixing the attention upon some function or organ, even when this was unattended by emotion or anxiety.

Sir Henry Holland's theory was quickly seized upon by Braid, who thought he had found in it, not only an explanation of the action of certain drugs, but also of the phenomena of hypnotism. According to Braid, the action of homœopathic remedies, when these were given in attenuated solutions, was a purely subjective one; he also believed that the mental element associated with the administration of drugs in general had been far too much ignored. Braid considered that

all medicines had a two-fold action; one due to their physical properties, the other to the patient's expectation of a definite result.

Many authorities still believe that suggestion is largely intermixed with ordinary medical practice, and often forms the most important factor in its success. According to Dr. Wilks: "To sit down in one's chair and write on a piece of paper the name of some drug for every ailment, without exception, which comes under our observation, is, in the present state of medicine, an absurdity, and is simply a pandering to human weakness. I do not say that drugs are not useful in a moral sense. I am merely contending that the method is not scientific, as we usually apply this term. I know of no more successful practitioner than the late Sir William Gull, and his treatment was rational; but he did not credit any particular drug with the properties ascribed to it by the patient. His prescriptions very often consisted of nothing but coloured water."

Dr. Wilks states that changes in the pathological views of disease have caused the whole method of its treatment to be altered again

and again, and that further chemical knowledge frequently shows that the drugs we employ do not possess the qualities we have been in the habit of attributing to them.

The late Dr. Hack Tuke, in speaking of Sir Andrew Clarke, said: "His favourite drugs were bi-carbonate of potash and a vegetable bitter, but neither drugs nor diet formed the central factor of his treatment, or explained its success. 'Suggestion' lay at the root of it all. The term, however, is too mild, unless understood in the technical sense in which it has been employed in recent times. In short, Sir Andrew out-Bernheimed Bernheim; he was, in a word, the most successful hypnotist of his day."

The theory, held by Professor Benedikt, of Vienna, that magnets possess extraordinary therapeutic powers, is an interesting modern example of the unconscious use of suggestion in medicine. According to Benedikt, certain forms of hysteria are better treated by the magnet than by electricity, hydropathy, or drugs. When the magnet is applied to the sensitive vertebræ, without removal of the dress, the irritable patient soon becomes quiet,

or even quasi-paralysed. The muscles gradually relax, the respiration becomes sighing, consciousness slowly disappears. The resistance to conduction in motor nerves could easily become absolute. The two poles have different effects. The magnet must be applied with caution; the patients may be injured by it.

These statements were recently tested in America; electro-magnets of enormous power were used (2,000 to 5,000 C.G.S. units to the square centimetre), and experiments were made on human subjects and lower animals. A young dog was subjected to magnetic influence for five hours (apparently an absolutely painless experiment); but, instead of being paralysed from the increased resistance to conduction in motor nerves, on being liberated it was more lively than before. The experimenters conclude that the human organism is in no wise appreciably affected by the most powerful magnet known to modern science; that neither direct nor reversed magnetism exerts any perceptible influence upon the iron contained in the blood, upon the circulation, upon ciliary or protoplasmic

movements, upon sensory or motor nerves, or upon the brain. The ordinary magnets used in medicine, they say, have a purely suggestive or psychic effect, and would, in all probability, be just as useful if made of wood.

Admitting that Dr. Wilks' views as to the value of drugs are distinctly pessimistic, we must still grant the importance of mental influences in relation to the ordinary medical treatment of disease. On this point, however, I shall not dwell further, but will pass at once to the subject of hypnotism.

Modern hypnotism undoubtedly owes its origin to mesmerism, and to understand its evolution, a clear conception of mesmeric theories is necessary ; of these the views of Esdaile may be regarded as a fair summary.

JAMES ESDAILE ; HIS MESMERIC THEORY AND PRACTICE.

James Esdaile was born at Montrose in 1808. He studied medicine at Edinburgh University, graduated there as M.D. in 1830 ; obtained a medical appointment in the service of the East India Company, and arrived at Calcutta in July, 1831.

Esdaile made his first mesmeric experiment in 1845, when in charge of the Native Hospital at Hooghly. The subject was a Hindoo convict who had just undergone a painful surgical operation, which was about to be repeated. At this time, Esdaile knew nothing of mesmerism, except what he had read in the daily papers, but it occurred to him to try to mesmerise this patient in order to render him insensible to pain. The experiment was successful, and was again repeated on the same subject a week later. This encouraged Esdaile to persevere, and at the end of a year he reported 120 painless operations to the Government. As up to this date no anæsthetic of any kind had been employed in surgical operations in India, his cases naturally excited much attention. A committee, largely composed of medical men, was appointed to investigate his work; their report was favourable, and Esdaile was placed at the head of a Government Hospital in Calcutta, for the express purpose of mesmeric practice. From this date, until he left India in 1851, he occupied similar posts. He recorded 261 painless capital operations and

many thousand minor ones, and reduced the mortality in the removal of the enormous tumours of elephantiasis from 50 to 5 per cent. Patients flocked to him from all parts of the country, and the record of his painless mesmeric operations forms one of the most fascinating and romantic pages in the whole history of medical science.

Esdaile believed that mesmeric phenomena were due to the action of a vital curative fluid, or peculiar physical force, which, under certain circumstances, could be transmitted from one animal to another. Various inanimate objects, such as metals, crystals and magnets, were also supposed to possess this force or fluid, and to be capable of inducing and terminating the mesmeric state, and of exciting, arresting and modifying its phenomena. One metal, for example, would produce catalepsy, another change this into paralysis; a glass of water could be changed with odyllic force by being breathed upon by the mesmeriser. Esdaile thus summarises his theory of the therapeutic action of mesmerism: "There is good reason to believe that the vital fluid of one person can be poured into

the system of another. A merciful God has engrafted a communicable, life-giving, curative power in the human body, in order that when two individuals are found together, deprived of the aids of art, the one in health may often be able to relieve his sick companion, by imparting to him a portion of his vitality."

After leaving India, in 1851, Esdaile settled in Perth; and about a year later informed Elliotson that he had found the inhabitants of the far North as susceptible to mesmerism as those of the far East. Dr. Fraser Thompson, Physician to the Perth Infirmary, became a convert and performed some successful mesmeric operations. His colleagues, however, called a meeting of the Directors, and stated that they would resign if the practice of mesmerism were permitted in the Hospital.

Esdaile's last days were undoubtedly embittered by the mesmeric controversy raging in England, of which the following case affords an illustration:—Mr. Ward, a Nottinghamshire surgeon, amputated a thigh during mesmeric trance; the patient did not make a single muscular movement during the entire opera-

tion, and was afterwards unable to recall the slightest sensation of pain. The case was reported to the Royal Medical and Chirurgical Society, but was badly received. Dr. Copland proposed that no account of such a paper having been read before the Society should be entered in its minutes ; for pain was a wise provision of Nature with which it was impious to interfere. He considered that patients ought to suffer pain while their surgeons were operating upon them, as this did them good and enabled them to recover better.

JAMES BRAID, THE FATHER OF HYPNOTISM.

James Braid commenced to investigate the subject of mesmerism in 1841. He was born in Fifeshire in 1795, had studied at Edinburgh University, and at this time was in practice in Manchester, where he had already gained a high reputation as a skilful surgeon. Braid believed mesmeric phenomena were due to self-deception or trickery, and, at the first mesmeric *séance* at which he assisted, saw nothing to cause him to alter his views. Six days later he noticed that one subject was unable to open his eyes. He regarded this as

a real phenomenon and was anxious to discover its physiological cause; and the following evening, when the case was again operated on, he believed he had done so. After making a series of experiments, chiefly on personal friends and relatives, he expressed his conviction that the phenomena he had witnessed were purely subjective, and commenced almost immediately to place these views before the public. In 1843 Braid published "Neurypnology, or the Rationale of Nervous Sleep." This was followed by many other works of more or less importance, and of these I have been able to trace 32, but all have long been out of print in this country.

According to Braid, the phenomena of mesmerism depended entirely on the physical and psychical condition of the patient, and were absolutely independent of the volition of the operator, or of any mystical or magnetic fluid which emanated from him. From the physiological side he explained the phenomena by changes in the nervous system of the subject. These consisted in the exhaustion of certain nerve centres, with resulting decrease in the functional activity

of the central nervous system ; they arose from continued monotonous stimulation of other nerves, *e.g.*, those of the eye by fixed gazing ; those of the skin by passes with contact.

He explained the phenomena psychologically by concentration of attention and monoideism. The mind was so engrossed with a single idea as to render it dead to all other influences ; the attention was concentrated upon the particular function called into action, while the others passed into a state of torpor. Only one function was active at any one time, and hence intensely so ; the arousing of any dormant function was equivalent to superseding the one in action.

Braid proposed to substitute the term hypnotism for that of mesmerism, and invented the general terminology of the subject, which remains little altered to the present day. He performed many experiments in order to test the alleged powers of magnets, metals, drugs in sealed tubes, &c., and found that the phenomena described by the mesmerists appeared when the patients had pre-conceived ideas on the subject, or when these were excited by leading questions, but were

invariably absent when they were ignorant of what was being done. Real magnets had no effect when the patients were unaware of their presence, while pretended magnets produced the phenomena when the patients knew what was expected to occur; and thus the mind of the patient alone was sufficient to produce the effects attributed to magnetic or odyllic force. Many cases of alleged clairvoyance and thought transference were also investigated by Braid; but he was never able to find anything but hypnotic exaggeration of natural powers.

DANGERS.

According to Braid, the hypnotic subject acquired new and varied powers, but did not at the same time lose his volition or moral sense. During hypnosis the patients evinced great docility, but were quite as fastidious of correct conduct as when in the natural state; they would neither reveal secrets nor accept improper suggestions. Braid stated that he had proved that no one could be affected by hypnotism at any stage unless by voluntary compliance.

MEDICAL CASES.

Braid recorded numerous medical cases which were relieved or cured by hypnotism. The majority of these were functional nervous disorders, but remarkable results were also obtained in many cases of organic disease. Of the latter, the clearing up of a long-standing corneal opacity, in a patient who was being hypnotised for the relief of a rheumatic affection, is an interesting example. Marked improvement was also obtained in many cases of organic paralysis.

Hypnosis, in Braid's opinion, was not necessarily associated with loss of consciousness, and in many of his most successful cases the patients were afterwards able to recall all that had taken place. He claimed that he could hypnotise his patients more quickly than the mesmerists could influence theirs, and also that his curative results were superior, despite the fact that he neither believed in, nor invoked, occult powers.

In 1859, Dr. Azam of Bordeaux became acquainted with Braid's hypnotic work and commenced to investigate the subject for

himself; an account of his experiments, with much reference to Braid, appeared in the Archives de Médecine in 1860. From this date, the subject of hypnotism was never lost sight of in France, but it was not until forty years after its original publication that "Neurypnology" was translated by Dr. Jules Simon.

DR. A. A. LIÉBEAULT.

Liébeault was born in 1823, and commenced to study medicine in 1844. In 1848, he read a book on animal magnetism; this impressed him greatly, and a few days later he successfully mesmerised several persons. He received his M.D. in 1850, and shortly afterwards started country practice. He worked hard, and was often in the saddle making his rounds at 2 a.m. He had no private fortune, but in ten years he saved enough to enable him to live independently of his profession. In 1860, he began to study mesmerism seriously, just at the time that Velpéau communicated Azam's experiments to the Académie de Médecine. In order to find subjects for experiment, Liébeault took advantage of the parsimonious

character of the French peasant. His patients had absolute confidence in him, but they had been accustomed to be treated in the ordinary manner. He, therefore, said to them : "If you wish me to treat you with drugs, I will do so, but you will have to pay me as formerly. On the other hand, if you will allow me to hypnotise you, I will do it for nothing." He soon had so many patients that he was unable to find time for necessary repose or study. In 1864, he settled in Nancy; lived quietly on the interest of his capital, and practised hypnotism gratuitously among the poor.

For two years he worked hard at his book, "Du Sommeil et des États analogues, considérés surtout au point de vue de l'action de la morale sur le physique," but of this one copy alone was sold. His colleagues regarded him as a madman; the poor as their Providence, calling him "the good father Liébeault." His clinique was crowded with patients; of these he cured many who had vainly sought help elsewhere, and few left him without having received benefit. In 1882, Liébeault cured an obstinate case of sciatica of six

years' duration, which Bernheim had treated in vain for six months. In consequence of this Bernheim visited Liébeault. This was a great event in the life of the humble doctor. At first Bernheim was sceptical and incredulous, but soon this changed into admiration. He multiplied his visits, and became a zealous pupil and true friend of Liébeault. In 1884, Bernheim published the first part of his book, "De la Suggestion," which he completed in June, 1886, by a second part, entitled "La Thérapeutique suggestive." From this date, Liébeault's name became known throughout all the world. The first edition of his book was quickly bought up, and doctors flocked from all countries to study the new therapeutic method.

In the summer of 1889, I spent a fortnight at Nancy in order to see Liébeault's hypnotic work. His clinique, invariably thronged, was held in two rooms situated in a corner of his garden. The interior of these presented nothing likely to attract attention ; and, indeed, anyone coming with preconceived ideas of the wonders of hypnotism would be greatly disappointed. For, putting aside the methods of treatment, and some slight differences probably due to race-

characteristics, one could easily have imagined oneself in the out-patient department of a general hospital. The patients perhaps chatted more freely amongst themselves, and questioned the doctor in a more familiar way than one had been accustomed to see in England. They were taken in turn, and the clinical case-book referred to ; hypnosis was then rapidly induced by the method about to be described, suggestions given, and notes taken, the doctor maintaining the while a running commentary for my benefit.

The patient was placed in an armchair, told to think of nothing, and to look steadily at the operator. This fixation was not maintained long enough to produce any fatigue of the eyes, and appeared to be simply an artifice for arresting the attention. If the eyes did not close spontaneously, Liébeault requested the patient to shut them, and then proceeded to make the following suggestions, or others resembling them :—“ Your eyelids are getting heavy, your limbs feel numb, you are becoming more and more drowsy, &c.”

Nearly all the patients I saw were easily and rapidly hypnotised, but Liébeault informed

me that nervous and hysterical patients were his most refractory subjects.

As I was a stranger, an exception was made in my favour, and I was shown a few hypnotic experiments; but cure, not experiment, seemed the sole object. The quiet ordinary everyday tone of the whole performance formed a marked contrast to the picture drawn by Binet and Féré of the morbid excitement shown at the Salpêtrière. The patients told to go to sleep, apparently fell at once into a quiet slumber, then received their dose of curative suggestions, and when told to awake, either walked quietly away or sat for a little to chat with their friends; the whole process rarely lasting longer than ten minutes. The negation of all morbid symptoms was suggested; also the maintenance of the conditions upon which general health depends, *i.e.*, sleep, digestion, &c. I noticed that in some instances curative suggestions appeared to be perfectly successful, even when the state produced was only that of somnolence. The cases varied widely, and most of them were either relieved or cured. No drugs were given; and Liébeault took especial pains to

explain to his patients that he neither exercised nor possessed any mysterious power, and that all he did was simple and capable of scientific explanation.

Two little incidents, illustrating the absence of all fear in connection with Liébeault and hypnotism, interested me greatly.

A little girl about five years old, dressed shabbily, but evidently in her best, with a crown of paper laurel leaves on her head and carrying a little book in her hand, toddled into the sanctum, fearlessly interrupted the doctor in the midst of his work, by pulling his coat, and said : " You promised me a penny if I got a prize." This, accompanied by kindly words, was smilingly given, incitement to work having been evoked in a pleasing, if not scientific way. Two little girls, about six or seven years of age, no doubt brought in the first instance by friends, walked in and sat down on a sofa behind the doctor. He, stopping for a moment in his work, made a pass in the direction of one of them and said : " Sleep, my little kitten," repeated the same for the other, and in an instant they were both asleep. He rapidly gave them their dose of suggestion and

then evidently forgot all about them. In about twenty minutes one awoke, and wishing to go essayed, by shaking and pulling, to awaken her companion—her amused expression of face, when she failed to do so being very comic. In about five minutes more the second one awoke, and hand in hand they trotted laughingly away.

Braid anticipated many of the most important observations of the School of Nancy; but we ought not, on that account, to undervalue the services of that School, and more especially those of its founder—Liébeault. Braid's researches were undoubtedly the exciting cause of the hypnotic revival in France, but little or nothing was known of any of his works except "Neurypnology," and his last MS., which contained some of his later views, was not published in France until 1883. Liébeault independently arrived at the conclusion that the phenomena of hypnotism were purely subjective in their origin, and to him we owe the development of modern hypnotism.

Another point in reference to their career is worthy of note. Braid's views at once

brought him fame. His books sold rapidly, the demand for them exceeding his power of supply. The medical journals were open to him, to an extent which may well excite envy in those interested in the subject at the present day. Liébeault's book, on the contrary, remained unsold ; his statements only found sceptics, his methods of treatment were rejected without examination, and he was laughed at and despised by all. From the day he settled in Nancy in 1864, until Bernheim—some twenty years later—was the means of bringing him into notice, Liébeault devoted himself entirely to the poor, and refused to accept a fee lest he should be regarded as attempting to make money by unrecognised methods. Even in his later days, fortune never came to him, nor did he seek it, and his services—services, which he himself with true modesty described as the contribution of a single brick to the edifice many were trying to build—only began to be appreciated when old age compelled him to retire from active work. Though his researches have been recognised, it is certain that they have not been estimated

at their true value, and that members of a younger generation have reaped the reward which his devotion of a lifetime failed to obtain.

The term "School of Nancy" has been applied to Liébeault and his colleagues; but, as Professor Beaunis points out, they do not claim to have originated a School, and, though they agree on certain points, differ widely on others.

According to Liébeault, and other members of the so-called School of Nancy, hypnosis is a physiological condition which can be induced in those who enjoy perfect health, and its phenomena are analogous to those of normal waking and sleeping life. Everybody, they say, is liable to be influenced by suggestion; this susceptibility is increased in hypnosis and forms the sole distinction between it and the normal state.

To this view several objections might be raised. The success of suggestion depends not on the suggestion itself but on conditions inherent in the subject. These are (1) the willingness to accept and carry out the suggestion, and (2) the power to do

so. In the hypnotised subject, except in reference to criminal or improper suggestions, the first condition is generally present. The second varies according to the depth of the hypnosis and the personality of the patient. For instance, I might suggest analgesia, in precisely similar terms, to three subjects and yet obtain quite different results. One might become profoundly analgesic, the second slightly so, and the third not at all. Just in the same way, if three jockeys attempt to make their horses gallop a certain distance in a given time, the suggestions conveyed by voice, spur, and whip may be similar, and yet the results quite different. One horse, in response to suggestion, may easily cover the required distance in the allotted time; it was both able and willing to perform the feat. The second, in response to somewhat increased suggestion, may nearly do so; it was willing, but had not sufficient staying power. The third, able but unwilling, not only refuses to begin the race, but bolts off in the opposite direction. With this horse we have the exact opposite of the result obtained in the first instance; and yet possibly the amount of

suggestion it received largely exceeded that administered to the others.

As Myers has pointed out, the operator directs the conditions upon which hypnotic phenomena depend, but does not create them. "Professor Bernheim's command, 'Feel pain no more,' is no more a scientific instruction *how* not to feel pain, than the prophet's 'Wash in Jordan and be clean' was a pharmacopœial prescription for leprosy." In hypnosis, the essential condition is not the means used to excite the phenomena, but the peculiar state which enables them to be evoked.

Suggestion no more explains the phenomena of hypnotism than the crack of a pistol explains a boat race. Both are simply signals—mere points of departure, and nothing more. In Bernheim's hands the word suggestion has acquired an entirely new signification, and differs only in name from the "odyllic" force of the mesmerists. It has become mysterious and all-powerful, and is supposed to be capable, not only of evoking and explaining all the phenomena of hypnotism, but also of originating—nay, even of being—the condition itself. According to this view, suggestion not only

starts the race, but also creates the rowers and builds the boat !

While Liébeault, Bernheim and others believe that the hypnotic state is practically identical with the normal, they at the same time hold that the volition is weakened or suspended in hypnosis, and that disagreeable, or even criminal acts, can sometimes be successfully suggested to the subject. This question I will discuss later in connection with another theory.

CHARCOT'S THEORY, OR THAT OF THE SALPÊTRIÈRE SCHOOL.

According to this School, hypnosis is an artificially induced morbid condition — a neurosis only to be found in the hysterical, and its phenomena can be produced by purely physical means. This theory cannot be accepted unquestioned, for, as the following statistics show, if the hysterical alone can be hypnotised, then over 90 per cent. of mankind must suffer from hysteria. Some years ago, Bernheim had already attempted to hypnotise 10,000 hospital patients, with over 90 per cent. of successes, while Dr. Wetterstrand, of

Stockholm, recently reported 6,500 cases, with 3 per cent. failures. Schrenck-Notzing, in his *First International Statistics*, published in 1892, gave 8,705 cases by 15 observers in different countries, with 6 per cent. of failures. Mr. Hugh Wingfield, when Demonstrator of Physiology at Cambridge, attempted to hypnotise over 170 men, all of whom, with the exception of 18, were undergraduates. In about 80 per cent. hypnosis was induced at the first attempt; but, as no second trial was ever made with the unsuccessful cases, these results undoubtedly understate the susceptibility.

Most of the undergraduates would be drawn from our public schools; and, if these do not always turn out good scholars, they cannot at least be accused of producing hysterical invalids. Braid stated that the nervous and hysterical were the most difficult to hypnotise, while Liébeault found soldiers and sailors particularly easy to influence. Grossmann, of Berlin, recently asserted that hard-headed North Germans were very susceptible, and I observed that healthy Yorkshire farm labourers made remarkably good subjects. Professor Forel told me that

he had hypnotised nearly all his asylum warders; that he selected these himself, and certainly did not choose them from the ranks of the hysterical.

These and similar facts apparently justify the statements of Forel and Moll that it is not the healthy, but the hysterical who are the most difficult to hypnotise. According to the former, "every mentally healthy man is naturally hypnotisable;" while the latter says: "If we take a pathological condition of the organism as necessary for hypnosis, we shall be obliged to conclude that nearly everyone is not quite right in the head. The mentally unsound, particularly idiots, are much more difficult to hypnotise than the healthy. Intelligent people, and those with strong wills, are more easily hypnotisable than the dull, the stupid, or the weak willed."

CAN VARIOUS PHYSICAL AND MENTAL PHENOMENA BE EXCITED BY THE APPLICATION OR NEAR PRESENCE OF CERTAIN METALS, MAGNETS, AND OTHER INANIMATE OBJECTS?

Here, in the assertions of the Salpêtrière School and their refutation by that of Nancy,

we have an exact counterpart of the controversy between Braid and the mesmerists. All the old errors, the result of ignoring mental influences, are once more revived. Medicines are again alleged to exercise an influence from within sealed tubes. The physical and mental conditions of one subject are stated to be transferable to another, or even to an inanimate object. It is useless to enter into any arguments to refute these statements, for this would be needlessly repeating the work of Braid. Indeed, in many instances, their absurdity renders argument unnecessary. For example, when a sealed tube, containing laurel-flower water was brought near a Jewish prostitute, she adored the Virgin Mary! The chief apostle of these doctrines is Luys; and considerable attention was drawn to them in this country in 1893 by popular articles in the daily papers and elsewhere. Indeed, the editor of a well-known medical journal thought them of sufficient importance to demand his writing a book in order to disprove them. He apparently was ignorant of the fact that M. Dujardin-Beaumetz had, in 1888, reported to the Académie de Médecine that Luys' experiments

were conducted so carelessly as to rob them of all value, and that among students of hypnotism they are entirely disregarded.

THE SUBLIMINAL CONSCIOUSNESS THEORY.

Within recent times another theory has arisen. This, instead of explaining hypnotism by the arrested action of some of the brain centres which subserve normal life, attempts to do so through the arousing of certain powers over which we normally have little or no control. This theory appears under various names, "Double Consciousness," "Das Doppel-Ich," &c., and the principle on which it depends is largely admitted by science. William James, for example, says: "In certain persons, at least, the total possible consciousness may be split into parts which co-exist, but mutually ignore each other."

The clearest statement of this view is given by F. W. H. Myers ; he suggests that the stream of consciousness in which we habitually live is not our only one. Possibly our habitual consciousness may be a mere selection from a multitude of thoughts and sensations, some at least equally conscious with those we

empirically know. No primacy is granted by this theory to the ordinary waking self, except that among potential selves it appears the fittest to meet the needs of common life. As a rule, the waking life is remembered in hypnosis, but the hypnotic life is forgotten in the waking state; this destroys any claim of the primary memory to be the sole memory. The self below the threshold of ordinary consciousness Myers terms the "subliminal consciousness," and the empirical self of common experience the "supraliminal." He holds that to the subliminal consciousness and memory a far wider range, both of physiological and psychical activity, is open than to the supraliminal. The subliminal, or hypnotic self, can exercise over the nervous, vasomotor and circulatory systems a degree of control unparalleled in waking life.

According to the late Professor Delboeuf, the hypnotic subject's power of regulating his own organism may be a revival of that possessed by lower animal types—the possible remote ancestors of the human race. In the latter, he said, the animal was just as conscious of what was taking place in its interior

as it was of what was happening at its periphery. With the progress of development, however, the care of the vegetative life has been handed over by the will to nervous mechanisms which have learnt to regulate themselves, and which in general fulfil their task to perfection. Sometimes the machine goes wrong, and intervention becomes desirable. The power which formerly voluntarily regulated it has, however, dropped out of the normal consciousness, and if we desire to find a substitute for it we must turn to hypnotism.

In the hypnotic state the mind is in part drawn aside from the life of relation, while at the same time it preserves its activity and power. Voluntary attention can be abstracted from the outer world and directed with full force upon a single point, and the hypnotic consciousness is thus able to put in movement machinery which the normal consciousness has lost sight of and ceased to regulate. It may be able to act, not only on the reflexes, but on the vasomotor system, on the unstriped muscles, on the apparatus of secretion, &c. If a contrary opinion has till now prevailed, this is because observation has been exclusively directed to

the normal exercise of the will. It can, however, in the hypnotic state, regulate movements which have become irregular and assist in the repair of organic injuries. In a word, hypnotism does not depress but exalts the will, by permitting it to concentrate itself upon the point where disorder is threatened.

By this theory Delboeuf attempts to explain the mechanism of the inverse action of the moral on the physical, which is sometimes, in his opinion, almost, if not quite, equal to that of the physical on the moral.

The following is one of the most interesting of the experiments upon which he formed his conclusions. The subject, J., was a healthy young woman, who had for several years been one of his servants, and whom he had previously hypnotised. Delboeuf first explained to her what he wished to do, and obtained her consent in the waking state. He then extended both her arms upon a table, heated red-hot a bar of iron, eight millimetres in diameter, and applied it to both of them, taking care that the burns should be identical in duration and extent; while at the same time he suggested that she should feel pain in the left arm alone.

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The operation was performed at seven o'clock in the evening, and immediately afterwards each arm was covered with a bandage. During the night J. had pain in the left arm, but felt nothing in the right. Next morning Delboeuf removed the bandages; the right arm presented a defined eschar, the exact size of the iron, without inflammation or redness; on the left was a wound of about three centimetres in diameter with inflamed blisters. Next day the left arm was much worse, and J. complained of acute pain. Delboeuf then hypnotised her, and removed the pain by suggestion. The wound dried and inflammation rapidly disappeared.

In Delboeuf's opinion the persistent belief that one is suffering from disease may ultimately cause disease, and, in the same way, the conviction that a morbid condition does not exist may contribute to its disappearance. He considers that the organic changes, which follow such an injury as we have just described in the case of J., are not alone due to the injury itself, but are also partly caused by the patient's consciousness of pain. The absence or presence of pain may, to a greater or lesser

extent, influence vasomotor conditions. On the one hand, organic injury, unassociated with pain, may not be followed by congestion, inflammation or suppuration, while in an identical injury, accompanied by pain, these conditions may be present. The consciousness of pain, in addition to being sometimes responsible for morbid changes at the site of injury, may also help to spread them to other parts more or less remote, and thus, when pain is removed or relieved, this really means the disappearance or decrease of one of the factors in the organic malady.

This freedom from pain under conditions of nerve and tissue with which it is usually inevitably connected, Myers regards as one of the great dissociative triumphs of hypnotism. Some intelligence, he says, is involved in a suppression thus achieved; for this is obtained, not, as with narcotics, by a general loss of consciousness, but by the selection and inhibition from among all the percipient's possible sensations of disagreeable ones alone. This is not a mere anæsthetisation of some particular group of nerve-endings, such as cocaine produces; it involves the removal

also of a number of concomitant feelings of nausea, exhaustion, anxiety, not always directly dependent on the principal pain, but needing, as it were, to be first subjectively distinguished as disagreeable before they are picked out for inhibition.

HYSTERIA : A DISEASE OF THE SUBLIMINAL SELF.

Myers does not consider the subliminal self free from disease any more than the supraliminal ; subliminal disturbances may arise and make themselves felt in the supraliminal being. He draws attention to the analogy which exists between the changes in the nervous vasomotor and circulatory systems which occur in hypnosis, and those presented by hysteria. Hysterical phenomena, in his view, are produced by self-suggestions of an irrational and hurtful kind ; they are diseases of the hypnotic substratum. Hypnotism is not a morbid state ; it is the manifestation of a group of perfectly normal, but habitually sub-jacent powers, whose beneficent operation we see in cures by therapeutic suggestion, whose neutral operation we see in ordinary hypnotic

experiment, and whose diseased operation we see in the vast variety of self-suggested maladies.

The following are the points most worthy of note in the theories of Myers and Delboeuf:—

1. The chief characteristic of the hypnotic state is the subject's far-reaching power over his own organism.—All observers, from Braid onwards, have recognised that the mental and physical conditions of the hypnotic subject could be influenced to an extent and in a fashion unparalleled in waking life. Of this many examples are to be found in the records of psychological and physiological experiments, and in numerous cases of disease relieved or cured by hypnotic treatment. Myers and Delboeuf, however, were apparently the first since Braid to realise that it is the subject, not the operator, who controls these powers.

2. The hypnotic powers are exercised intelligently by the subject, and manifest an increased, not diminished, volition.—Both Myers and Delboeuf draw attention to the fact that the volition is unimpaired in hypnosis. The former cites instances in which the moral sense is apparently increased, and

the latter states that hypnosis does not depress, but exalts the will, by permitting it to concentrate itself upon the point where disorder is threatened. Further, Myers shows that the inhibition of pain in hypnosis involves several intelligent and complicated acts.

3. Subliminal or subconscious states are more clearly defined.—Many cases of alternating consciousness have been observed in the non-hypnotised subject. As a rule this has been associated with hysteria, or some other morbid condition. Sometimes the primary waking state has been morbid, the secondary one comparatively healthy. Of this class, Félicité X., so ably described by Dr. Azam, is the familiar example.

The works and writings of Edmund Gurney, A. T. Myers, Frederic Myers, Pierre Janet, William James, and many others, have rendered us familiar with the phenomenon of secondary or multiple consciousness in hypnosis. It can be experimentally demonstrated not only that the hypnotised subject possesses a secondary consciousness, which alternates with his primary one, but also that it is possible for the two to co-exist and to

manifest different phenomena simultaneously. For example, an individual may have his attention concentrated upon the act of reading aloud from a book with which he was previously unacquainted, and, at the same instant, he may be writing automatically—as far as his primary consciousness is concerned—the result of a problem, suggested to him in hypnosis the moment before that state was terminated. The primary waking consciousness retains no recollection of the hypnotic suggestion; does not know that the secondary consciousness, after the hypnotic state has been terminated, first solves the problem and then directs the motor acts which record it; and is also unconscious of the motor acts themselves.

4. Hysteria is a disease of the hypnotic substratum of the personality.—Myers' theory that hysteria is a disease of the hypnotic substratum is an extremely ingenious one, and is the only reasonable explanation of the resemblance between certain hypnotic and hysterical phenomena with which I am acquainted. As we have seen, those who believed that hypnosis and hysteria

were identical stated that the hysterical alone could be hypnotised. On the other hand, those with wider experience have successfully demonstrated that the hysterical are generally, if not invariably, the most difficult to influence. Of this fact Myers' theory possibly affords an explanation. May not the difficulty of inducing hypnosis in the hysterical—of making one's suggestions find a resting-place in them—be due to the fact that the hypnotic substratum of their personality is already occupied by irrational self-suggestions which their waking will cannot control ?

5. The explanation of hypnotic powers by a supposed revival of those formerly possessed by lower non-human ancestral types.—Granting that one or more subconscious states exist in the human personality, and that hypnotic phenomena owe their origin to the fact that we have by some means or other succeeded in tapping them, two questions still remain :—

Thus, let it be supposed that I possess a friend called Brown, who is usually, physically and mentally, an ordinary individual ; from time to time, however, he manifests an extraordinary increase of physical power. Again,

though still more rarely, he displays a range of mental powers of which he had formerly given no indication. I ask for an explanation. I am told that Brown, as I know him best, is indeed Brown; but that his increased physical powers are due to the fact that when he shows them he is Jones, and his increased mental ones to the further fact that he is then Robinson. Granting that the phenomena afford evidence of three separate personalities, I cannot accept this explanation as a solution of the problem in its entirety. I want to know first, how did Jones and Robinson acquire their powers, and secondly, what has been done to or by Brown which has enabled these powers to be evoked?

A. How did Jones and Robinson acquire their powers?

Is it reasonable to suppose, with Delboeuf, that the hypnotic powers, regarded as a whole, existed in some ancestral type? Granting that a limited analogy exists between lower forms of animal life and hypnotised subjects as to their power of influencing certain physical conditions, it would, I think, be impossible to establish an analogy between the

mental and moral powers of the latter and those of the savage or lower animal. For example, one of my patients suddenly developed arithmetical powers far exceeding those she possessed in the normal state. She is not likely to have derived them from some savage ancestor, who was unable to count beyond five, or from some lower animal, presumably ignorant of arithmetic. Again, the same patient spontaneously solved in hypnosis a difficult problem in dressmaking. The power of correctly designing a garment, in accordance with the passing fashion of the present day, can hardly have been derived from some woad-stained ancestor, or lower animal form. Further, the increased modesty of the hypnotised subject, his greater power of controlling or checking morbid passions or cravings does not find its counterpart in the savage or ape.

B. What is the connection between hypnotic methods and the production of hypnotic phenomena ?

To this, I think, no reasonable answer has been given. Personally, I can see no logical connection between the acts of fixed gazing,

concentration of attention, or of suggested ideas of drowsy states, and the wide and varied phenomena of hypnosis. Hypnotic phenomena do not appear spontaneously, and one or other of the methods described must have been employed in each case before hypnosis was induced in the first instance. But I cannot conceive the idea that the methods explain the phenomena.

VOLITION IN HYPNOSIS. SUGGESTED CRIMES.

In direct opposition to the views of Braid, the writings of the Nancy School indicate a belief that the hypnotic state is essentially characterised by the obedience of the subject to the operator. Some years ago much stress was laid upon complete obedience; but now, possibly as the result of the influence of Professor Delboeuf, a greater power of resistance is conceded. The principal objection to the statement that certain hypnotic subjects will accept improper or criminal suggestions is to be found in the fact that it is based solely on laboratory experiments, and not on the observations of actual crime or impropriety.

The following is a typical case. It is suggested to a high-principled girl, in the alert stage of somnambulism with her eyes open, that she shall take a lump of sugar from the basin and put it into her mother's teacup, after having been informed that it is really a piece of arsenic certain to cause death. Bernheim alleges that the subject believes she has committed a real crime ; but it is necessary to examine the facts upon which this grave statement is founded. All that the somnambule did was to put a piece of sugar into a teacup, while her medical man made various untruthful assertions as to its composition. Bernheim and Liégeois assert that the subject accepted these absurd statements as true because, being hypnotised, she was unable to distinguish between truth and falsehood, while Delboeuf claims that she had sufficient sense left to know exactly what she was doing. To none of them does it seem to have occurred to ask the subject *during hypnosis* what she thought about the matter herself. If this had been done, she would promptly have solved the difficulty by stating that she recognised the experimental nature of the

whole performance. It may be noticed in passing that, while Bernheim considers the Salpêtrière subjects so abnormally acute that they can catch the slightest indication of the thoughts of the operator, and so destroy the supposed value of the phenomena alleged to be induced by metals, magnets, drugs in sealed tubes, &c., he, on the other hand, supposes the Nancy subjects to be so abnormally devoid of all intelligence as to be unable to understand when a palpable farce is played before them.

It is also worthy of note that while Bernheim believes in the possibility of suggested crime, he and other members of the Nancy School assert that no actual ill-effects have ever followed the medical use of hypnotism. Thus, Professor Forel says: "Liébeault, Bernheim, Wetterstrand, van Eeden, de Jong, Moll, I myself, and the other followers of the Nancy School, declare categorically that although we have seen many thousands of hypnotised persons, we have never observed a single case of mental or bodily harm caused by hypnosis; but, on the contrary, have seen many cases of illness relieved or cured by it." This statement I can fully endorse, as I have never seen

an unpleasant symptom, even of the most trivial nature, follow the skilled induction of hypnosis.

In the "Revue Médicale de l'Est," February 1st, 1895, Bernheim records the only case, as far as I know, in which death followed hypnosis induced by a medical man. The patient suffered from phlebitis, accompanied by severe pain ; and to relieve this, Bernheim hypnotised him. He died two hours afterwards, and *post-mortem* examination showed that death was due to embolism of the pulmonary artery. The case is referred to in the *British Medical Journal*, and though it is admitted that the occurrence was nothing more than an "unlucky coincidence," it is stated, at the same time, that "it is at least arguable that the psychical excitement induced by the hypnotising process may have caused a disturbance in the circulatory system, which had a share in bringing about the catastrophe." Bernheim has hypnotised over 10,000 hospital patients ; sometimes this would be for the relief of pain associated with inevitably fatal maladies ; and, therefore, the matter for surprise is that death has not frequently occurred during, or

shortly after, the induction of hypnosis. The majority of fatal illnesses receive medical treatment; it would then, according to the theory of the *British Medical Journal*, be justifiable to argue that the administration of drugs "may have had a share in bringing about the catastrophe." Certainly their use is likely to be attended with more physical and psychical excitement than is involved in the hypnotising processes in vogue at Nancy.

Such arguments against hypnotism are dangerous and apt to provoke unpleasant replies. For example, Moll, in reference to some hostile criticisms of Ziemssen, said: "If Ziemssen had shown the same scepticism when the tuberculine craze excited all Germany, much injury to science and to his patients would have been prevented. The wantonness with which at that time the lives of many were staked will remain as a lasting blemish upon science; and it cannot be denied that the excessive use of tuberculine was the cause of the untimely death of many human beings. In ordinary life, one would describe such a proceeding as an offence against the

person, of which the issue was death. I cannot recognise that there is a peculiar law for clinical professors ; and that when they have, in such a manner, hastened the death of a human being, another expression should be used."

When I commenced hypnotic work some seven years ago, I believed that the hypnotic subject was entirely at the mercy of the operator. I was soon aroused from this dream, however, not by the result of experiments made to test the condition, but from the constantly recurring facts which spontaneously arose in opposition to my pre-conceived theories. Of these facts the following case is an illustration :—

Miss C., aged 19, an uneducated girl, had been frequently hypnotised and was a good somnambule. She suffered greatly from her teeth, of which she had only sixteen left, all decayed. These were extracted at Leeds in the presence of some sixty medical men and dental surgeons. Anæsthesia was produced by written suggestion while I remained in another room. The operation was perfectly successful and unattended by pain, either then or after-

wards. At a later date I examined her mouth and found that a fragment of one of the stumps remained. I told her to come to my house to have it removed. She mentioned this to one of her neighbours, an old woman, who advised her to have no more teeth extracted, as this would cause her mouth to fall in. The following day she presented herself and was at once hypnotised, but refused to open her mouth, or to permit me to extract the tooth. Emphatic suggestion continued for half an hour produced no effect. This was the first occasion on which she had rejected a suggestion. I then awoke her and asked why she had refused to have the tooth extracted. She told me what her neighbour had said and expressed her determination to have nothing more done. I explained the absurdity of this, and pointed out that, as she had only the fragment of one tooth remaining, its removal could not affect the appearance of her face. As she was still obstinate, I said: "Unless this fragment is removed you cannot have your artificial teeth fitted." This argument was sufficient. She gave her consent in the waking state, was at

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once hypnotised and operated on without pain.

This case may be taken as typical of the spontaneous resistance to suggestion in hypnosis, which I encountered. Many similar ones were met with in which the patients refused to perform acts in any way distasteful to them, and that despite the fact that in every instance deepest somnambulism had been induced.

In most of the cases referred to, the patients refused to carry out suggestions in hypnosis which they would have rejected in the waking state. Sometimes, however, they refused in hypnosis things they would readily have done or submitted to when awake. For example, Dr. Alden, when Resident Physician at the Brompton Hospital, hypnotised a girl suffering from chronic pulmonary disease. She rapidly became a good somnambule. On one occasion, after hypnotising her, the nurse reminded him that it was his day for examining the patient's chest; but to his astonishment, she, although naturally docile and obliging, refused to allow it to be bared. She had previously been examined dozens of times by himself and

others, and had never made the slightest objection. He insisted upon her submitting, but was unable to overcome her resistance. He asked her why she objected now, when she had never done so previously. She replied: "You never before tried to examine my chest when I was asleep." On awaking she remembered nothing of what had occurred, and he said nothing to her about it. Afterwards the nurse told her, whereupon she was greatly distressed; and wondered how she could possibly have been so rude to the doctor.

In the cases above recorded, although a certain amount of evidence was obtained from the patients themselves in reference to their mental condition, no systematic attempt was made to investigate this. I am well aware that this admission is a startling one. I can only say in self-excuse that this all-important point has apparently been equally neglected by others. I have recently attempted to repair the mistake and with interesting results. For example, Miss H., a patient who was the subject of some successful experiments in reference to the appreciation of time in hypnosis, also refused certain suggestions.

I will now draw your attention to one example of this, as well as to her own description of her mental and physical condition during hypnosis. I suggested that she should steal a watch belonging to Mr. Barkworth, a friend who assisted at the experiments. The watch was placed upon the table and Mr. Barkworth hid behind a screen. I told the patient that Mr. Barkworth had gone and had left his watch ; that he was very absent-minded, would never remember where he had left it, would never miss it, &c., suggested that she should take it, that no one would ever know, &c. I awoke the patient. She took no notice of the watch. I asked her, "Where is Mr. Barkworth?" "Gone away." "He has left his watch, would you not like to take it?" The patient laughed and said: "No, of course not." I re-hypnotised her and asked: "What did I suggest to you a little while ago when you were asleep?" "That I should steal Mr. Barkworth's watch, that he was absent-minded, would never miss it, &c." "Then why did you not do so?" "Because I did not want to." "Was it because you were afraid of being found out?"

“No, not at all, but because I knew it would be wrong.”

On another occasion I again questioned her in hypnosis in reference to this suggested theft. I said: “Did you recognise that it was an experiment?” “Yes, perfectly.” “How did you know it was?” “I can’t tell you, I only felt sure it was.” On being questioned further, she said: “Well, I knew you would never really ask me to do anything wrong.” “If you were quite certain in your own mind that it was only an experiment, why did you not carry it out?” “Because I did not wish to do what was wrong, even in jest.” “If, then, I asked you to put a lump of sugar in someone’s tea and told you it was arsenic, would you do so?” She replied: “I would not take a watch, even if I knew the suggestion was made as an experiment, because this would be pretending to commit a crime. I would, however, put a piece of sugar into a friend’s teacup, if I were sure it was sugar, even though someone said it was arsenic, because then I should not be the one who was pretending to commit a crime.” So subtle a distinction would not, I think, have occurred

to the subject in the waking condition. In reply to further questions in hypnosis, she said she felt sure she could refuse any suggestion ; that she felt she was herself ; that she knew where she was and what she was doing. "Are you the same person asleep as awake?" I asked. "Yes," she replied, with a laugh.

Strangely enough, the most marked case of resistance to suggestion I have observed was that shown by Liébeault's celebrated somnambule, Camille. When I first visited Nancy Dr. Liébeault showed me this subject, who had been frequently hypnotised, and whom he regarded as a typical specimen of profound somnambulism, illustrating hypnotic automatism in its highest degree. He assured me that the suggestions he made to her were carried out with the fatality of a falling stone. He hypnotised her, and suggested that on awaking she should find on opening the outer door that there was a violent snow-storm, that she should at once return, complain of this, and proceed to the stove to warm herself. While so doing one of her hands would touch the stove and she would believe she had burnt it. It was a warm summer's day, and of

course the stove had not been lighted. The patient refused to accept the suggestion. Dr. Liébeault insisted for some time, and then gave up the attempt, saying that she sometimes refused suggestions. He then asked her: "Will you do this another time if you will not do it to-day?" She replied, "Yes, to-morrow." On the following day the suggestion was repeated and carried out in all its details. In this instance, then, the classic hypnotic automaton, the one who was supposed to carry out a suggestion with the fatality of a falling stone, refused one, not on moral grounds, but apparently from pure caprice.

The difference between the hypnotised and the normal subject, is to be found not so much in conduct as in the increased mental and physical powers of the former. Any changes in the moral sense, I have noticed, have invariably been in favour of the hypnotised subject. As regards obedience to suggestion, there is apparently little to choose between the two. A hypnotised subject, who has acquired the power of manifesting various physical and mental phenomena, will do so in response to sug-

gestion, for much the same reasons as one in the normal condition. In the normal state we are usually pleased to show off our various gifts and attainments, more especially if we think they are superior to those of others ; and in this respect the hypnotised subject does not differ. Both will refuse what is disagreeable ; in both this refusal may be modified or overcome by appeals to the reason, or to the usual motives which influence conduct. When the act demanded is contrary to the moral sense, it is usually refused by the normal subject, and invariably by the hypnotised one. I have never observed any decrease of intelligence in hypnosis ; in the alert stage it is often conspicuously increased, while in the lethargic it is only apparently, not really, suspended.

When one turns to the later works of Braid, and sees how clearly he proved by experiment that the hypnotised subject not only had the power of choosing between suggestions, but invariably refused those repugnant to his moral nature, one cannot help feeling surprised at the revival of theories in reference to so-called automatism or obedience, identical with

the views of the mesmerists. More especially so when one considers that Bernheim, who holds these views, also boldly asserts that there is nothing in hypnotism but the name; that it does not create a new condition, and that hypnotic acts are only exaggerated normal ones. According to Bernheim, however, the moral state in hypnosis differs widely from the normal; and this is in obvious contradiction to his own conception of hypnotism. One can understand, for example, how a prolonged muscular rigidity may be a hypnotic exaggeration of a somewhat shorter normal one; but it is difficult to comprehend how the murder of one's mother when hypnotised can be an exaggeration of the *refusal* to hurt a fly when awake.

It is now seven years since I commenced my hypnotic researches, and during that time I have not seen a single instance, either at home or abroad, in which the subject has performed any real act which was distasteful to him or repugnant to his moral sense. While incredulous as to the possibility of suggesting criminal or improper acts, I still think it important that hypnosis should be induced in

such a way as to render interference with the volition of the subject impossible. The patient should be made to realise that the phenomena of hypnosis are entirely due to the exercise of powers existing in his own mind and under his own control.

In illustration of my theory that the phenomena of hypnosis are not necessarily connected with any interference with the volition of the subject, I desire to draw your attention to two classes of cases :—

1. Where the operator has deliberately tried to minimise his own importance in reference to the induction of hypnotic phenomena.

Although I soon ceased to believe that the subject's volition was dominated by that of the operator, I still found, as the result of sensational writings on the question, that a considerable number of my patients objected to be hypnotised, on the ground that it would interfere with their volition. To obviate this difficulty, I changed my method of inducing and managing the hypnotic state. I commenced by informing every new patient that I did not believe it possible for the operator to dominate the volition of the subject, and that,

even if such a thing were possible, it could certainly be prevented by suggestion. I explained to my patients that nothing would be suggested without their consent having been previously obtained in the normal state. Under these circumstances, if the suggestions were successful, this would not imply any interference with volition, seeing that their consent had already been obtained. I pointed out that the fulfilment of a hypnotic suggestion frequently demonstrated an increased, not diminished, power of volition. For example, a patient who desired to resist a morbid impulse, but was unable to do so by the exercise of his normal volition, might gain this power by hypnotic suggestion. Thus, the suggestion did not suspend the volition of the subject, but removed the obstacle which prevented the wish being carried into action. Further, as resistance was manifested despite suggested obedience, it was reasonable to expect that this might be enormously increased by training. I suggested, therefore, to all patients during hypnosis, that they should invariably possess this power of resistance, and also that neither I nor anyone else should ever be able to

re-induce hypnosis without their express consent. This change of method did not affect the results. Notwithstanding the fact that the patients were convinced, and justly so, that they possessed complete control of the whole condition, hypnosis was evoked as easily as formerly, and as wide a range of phenomena was induced.

2. Where an attempt has been made to teach the subject to evoke hypnosis and its phenomena without the intervention of the operator.

Some six years ago I commenced to instruct patients how to hypnotise themselves. This was done by suggesting in hypnosis that they should be able to re-induce the state at a given signal ; as for example, by counting " one, two, three." These subjects could afterwards evoke the condition at will. I also found that the use of suggestion during hypnosis was not necessary for the induction of its phenomena. On the contrary, the suggestions could be made equally well beforehand in the waking state. The subject was able to suggest to himself when hypnosis should appear and terminate, and also the phenomena which he

wished to obtain during and after it. This training was at first a limited one; the patients, for example, were instructed how to get sleep at night, or relief from pain. They did not, however, always confine themselves to my suggestions, but originated others, and widely varying ones, regarding their health, comfort, or work. Some, trained in this way six years ago, still retain the power of hypnotising themselves.

In such cases it would be difficult, I think, to explain hypnotic phenomena as the result of arrested, or weakened volition; or of outside interference by the operator. It might be objected, perhaps, that the influence of the operator had not been entirely eliminated, on the ground that he had been associated with the induction of the primary hypnosis. The conditions, however, which are more or less frequently associated with the origin of a particular state are by no means essential for its after-manifestation. For instance, the art of swimming is usually taught either by means of a life-belt, or by attaching the pupil to a cord, which the teacher holds and guides by means of a rod. These artificial aids, how-

ever, are not essential to the art of swimming ; they are only useful in its acquirement. It would be illogical to ascribe a champion's power of winning a race to the presence of a life-belt which he discarded years before. In the same way, it would be unjustifiable to attribute a subject's power of influencing forces within his own body, by suggestions rising in his own mind, to the influence of the operator who had formerly instructed him how to evoke and direct this power.

Owing to their number and diversity, the sketch of hypnotic theories I have attempted to give is necessarily a very imperfect one. Max Dessoir, in his "Bibliography of Modern Hypnotism," published in 1888, cites 800 works by nearly 500 authors, and since that date many more have been written, while it would be difficult to find two authorities agreeing in every detail as to the theoretical explanation of all hypnotic phenomena.

During the last twelve years the practice of hypnotism has spread over nearly the entire Continent of Europe. It is now not only largely employed by the ordinary medical man,

but is also to be seen in daily use in hospital wards, while many distinguished physiologists and psychologists have published their observations of its phenomena. Apart from Nancy, the two most remarkable hypnotic Cliniques I have visited are those of Amsterdam and Stockholm. The former is under the direction of Drs. van Eeden and van Renterghem, who have published two accounts of their work giving the history of 1,089 cases treated from 1887 to 1893. The latter is conducted by Dr. Wetterstrand, who up to January, 1893, had treated 6,500 cases, and failed to induce hypnosis in 3 per cent. alone. Many of his clinical observations are of great value; one of the most interesting parts of his work is his treatment of epilepsy and various other forms of grave nervous disease by prolonged sleep. The patients rest quietly in bed in a condition of hypnotic trance, for periods varying from a week to a month, or even more, and meanwhile are fed at regular intervals by nurses who are put *en rapport* with them. This method, which adds mental rest to the ordinary "physical rest cure," I have myself successfully employed.

In addition to those to whom I have already referred, the following, amongst others, may be quoted as having recently testified to the therapeutic value of hypnotic treatment:—Forel, Freud, Gerster, Grossmann, de Jong, Scholz, von Schrenck - Notzing, Tatzel, Brunberg, Hecker, Krafft-Ebing, Ringier, Bergmann, Brügelmann, Fulda, Herzberg, Hirt, Schmidt, Vogt, Schmeltz, Lemoine, Joire, Voisin, de Mézeray, Bérillon, Dumontpallier, Gorodichze, Bonjour, Desplats, Bourdon, Tissié, &c. The nature of the cases treated varies widely, the most common, however, being different forms of functional nervous disease.

Possibly the most interesting and striking instances of the value of hypnotic treatment are to be found in the cure of morphinomania, dipsomania, and other moral diseases. In the "Zeitschrift für Hypnotismus," Part I., 1896, Wetterstrand reported 38 cases of morphinism treated by hypnotic suggestion. Of these, 28 were cured, 3 relapsed, and in 7 no result was obtained. In each instance the morphia had been injected subcutaneously. Many of the cases were exceedingly grave

and of long standing, and some were complicated with the cocaine and alcohol habit. With several the abstinence treatment had been tried without success—sometimes more than once. One of the successful cases—a medical man—had taken morphia for eighteen years, and during the last four years cocaine also. Another medical man, Dr. Landgren, recorded his own case in the same journal. Over five years have elapsed since he was successfully treated by Wetterstrand. Other methods, including residence in a retreat, &c., had failed. Other observers have reported similar cases, and in many instances sufficient time has now elapsed to enable us to judge of the permanency of the cure. Some of those with whom I am acquainted, who formerly suffered from dipsomania, are now actively engaged in business, or in successfully conducting medical practice; one has since been elected a Member of Parliament, while others are happy wives and mothers. In most of them the disease had been of long duration, varying from about five to fifteen years, and in some presented all its worst symptoms; thus, one patient had had

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several attacks of delirium tremens and epilepsy. The duration of the cure has lasted from two to over six years.

I do not for a moment pretend that by hypnotism one can cure everything and everybody, and agree with Braid in thinking that he who talks of a universal remedy is either a knave or a fool. On the other hand, I have seen many cases cured or relieved by hypnotism which had previously resisted long, careful and varied medical treatment.

In this country those who practice hypnotism have to contend with greater difficulties than are to be met with at Nancy. There, as the result of Liébeault's thirty years' work, fear and prejudice have been almost entirely removed, while here they not only exist, but are widely spread. For this, disgusting music-hall exhibitions, generally of a fraudulent nature, are largely to blame, although undoubtedly the erroneous views as to interference with volition, &c., expressed in the *British Medical Journal* have done still greater harm. Hence, in England, patients rarely turn to hypnotism except as a last resource and when all other methods of treatment

have long been tried in vain. Despite this, the results are encouraging, and have in many instances withstood the lapse of time.

One point is worthy of special notice. The results obtained by hypnotism are due to the action of the patient's mind on his own body, and are free from the disadvantages frequently associated with the use of drugs, or other similar remedial agents. Thus, the patient who is cured of insomnia by hypnotic suggestion has really acquired the power of producing sleep at will; while he who obtains sleep by means of an ordinary narcotic has often simply added a drug habit to his original disease.

My personal hypnotic work has been almost entirely of a therapeutic character; but hypnotic research, both physiological and psychological, has undoubtedly a wide field open to it. In reference to this a word of warning is perhaps not misplaced. Experiments should only be conducted on those in health, and never without express consent having been given in the waking state. Patients, above all others, should be regarded as sacred, and nothing should be suggested to them,

except what is necessary for the relief or cure of disease.

Now that the reality of the facts of hypnotism have been so abundantly proved, and successful simulation rendered impossible by the production of objective phenomena which no one can simulate, further scepticism and indifference seems scarcely conceivable. How be indifferent to a science which explains so much of what is mysterious in history, which supplies the psychologist with a genuine experimental method, and furnishes such aid to the study of cerebral physiology? How neglect an art by means of which pain of mind and body can be relieved, and a large number of diseases cured? The historian finds the whole subject of Magic, Oracles, Sybils and the like illuminated with a vivid light. The miraculous character of religious ecstasies, apparitions and stigmata disappears, and to Virchow's dilemma, formulated in 1875, concerning the celebrated Louise Lateau, "Either trickery or miracle," we may triumphantly reply, "Neither trickery nor miracle, but *Suggestion*."

To the psychologist, a harmless and painless means of intellectual and moral vivisection is

given ; while the physiologist, by the aid of hypnotic suggestion, can produce anæsthesia and other sensorial conditions, and regulate or modify the secretions, excretions and other functions of the human body, which the waking will is incapable of influencing.

While those who study and practise hypnotism differ widely in their theoretical explanations of its phenomena, what is common to all, as Professor Beaunis states, is the belief in its future—the profound conviction that this science, so ridiculed, constitutes one of the greatest advances of the human mind and one of its most precious possessions.

APPENDIX.

“NATURAL SELECTION AND MUTUAL AID.”

By PETER KROPOTKIN.

This lecture, which was the second in the series, was not written, and it has been impossible to reproduce it except in the following much epitomized form, which was printed at the time in “Humanity.”

After remarking that the subject of mutual aid is essential to any philosophy of humane science, the lecturer pointed out that, in the continual development of science, periods necessarily occur—as now—when there seems to be no satisfactory progress, there being a temporary pause while preparation is made for a new step, an advance to further generalisations. Untrained minds, impatient at the delay, attempt to supply more than science can give; and this, together with the patronage of Church and State, tends to impair the usefulness of Science. Political Economists who know nothing of the life of the people and the actual conditions of production, write learned works which are accepted as scientific; and in the same way Natural History is studied in closed laboratories and not, as Audubon

studied it, in the open forests. Thus conclusions are arrived at which are antagonistic to human nature, and it is believed that science is somehow instructing us to take each other by the throat. But science has no such prescription for us, and indeed no prescription at all; it merely tells us facts—what consequences follow what causes. "Darwinism" is now-a-days made to answer for every sort of outrage, is the explanation of every villainy, as, for example in our recent treatment of the Matabele, whose extinction is justified on the plea that "black men must go," "it seems cruel, but it is their inevitable destiny," and other equally "scientific" assertions. Nature, according to Huxley's theory, is no better than a gladiatorial show, where each being is against each, and there is no need for the spectators to turn their thumbs downwards (the signal for the *coup de grace*), because no quarter is ever shown in any case, since life is a continual free fight.

But, said the lecturer, Darwin does *not* teach this. He proves that there is a struggle for existence, in order to put a check on the inordinate increase of species. But this "struggle" is not to be understood in a crude and exclusive sense; there is a law of competition, but there is also what is still more important—a law of mutual aid, and as soon as the scientist leaves his laboratory and comes out into the open woods and meadows, he sees the importance of this law. Only those animals who are mutually helpful are

really fitted to survive; it is not the strong, but the co-operative species that endure.

Instances of mutual aid, of which any number might be quoted, may be seen even in the less developed forms of life. Land-crabs migrate in columns from sea to land; and the lecturer narrated how he had watched an overturned king-crab at the Brighton Aquarium laboriously set on its feet again by the repeated efforts of its companions. The good will of ants is signified by a free gift of food from full crop to empty crop, and this pact of friendship is not confined to individuals but extends to whole nests, thus showing that the Stomach exists not for individuals only but for the community. Natural Selection comes to aid those species that are social. Much is said of birds and beasts "of prey." But birds of prey are comparatively few in number, whereas the other kinds, where man has not come on the scene, are countless, as for example, the passenger pigeons in America, which once flew in such flocks as to obscure the sun for days, or the various species which in high northern latitudes breed in immense numbers and all co-operate to scare away the intruding robber. So, too, with the mammals. There is much talk of the savagery of lions and tigers, but how few they are by comparison, let us say, with the whole villages of prairie-dogs, who live in perfect amity and comradeship! The lecturer further instanced the vast processions of buffaloes that might once be seen in North America,

the beasts of prey that followed them being merely the scavengers of nature. The highest form of association among animals is of course to be seen among Monkeys, whose combined defence is so perfect that it has been said that they seldom die any but a natural death, and instances are recorded of their carrying off the dead body of a comrade from the tent of his human murderer. Mutual aid is thus a very substantial element in existence, and not for utilitarian purposes only, but for the simple enjoyment of life. The highest developed in every class is the most sociable, because the increased length of years which association secures is favourable to the increase of Experience.

It remains to apply this principle to *human* science. "It may be true of the animals," it is said, "but is it true of man? Is it true of savages?" a doubt to which even Spencer and Huxley have in some degree lent their sanction. But those who have lived among savages know that it is true. The records of the early travellers in Oceania and the Pacific Isles led to that conception of an ideal "state of nature" on which so much ridicule has been poured by later writers; but, as a matter of fact, scientific investigation has revealed in these races a remarkable wealth of institutions for mutual aid, and the existence of a happy and peaceful society without authority or government. In the tribal state which preceded the family every possession was shared in common, and whatever was held

by the individual returned to the tribe at his death. In the village communities of so-called "barbarians," there was a common ownership of land, and a jury system which settled quarrels by arbitration—intelligence having been developed to this extent out of mutual aid.

In spite of the teachings of supposed scientific authorities, mutual aid exists largely among the poorer classes of to-day; and if we leave printed matter, and go to study the actual facts of life, we find great material to support this belief. It was because Huxley over-looked this law of mutual aid, that he was driven to look for help from another quarter, and so gave some countenance to the idea of a return to supernaturalism.

The process of Mutual Aid has been developed from the first, through countless ages, among animals, and its application to Man is only a continuance of the same law. Let us note the lesson of Nature. In times of scarcity, how do animals and birds act? They migrate; or, like the ants, take concerted measures to provide themselves with food. Yet Man, the highest of animals, thinks he has no option but to rob his fellows, as Englishmen have robbed and spoiled the Matabele! There is no need of any extraneous or supernatural help or admonition. All the elements of morality are inherent in Nature, if we would but study them.