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ON THE RELATIVE EDUCATIONAL VALUE OF THE CLASSICS AND THE MATHEMATICO-PHYSICAL SCIENCES IN COLLEGES AND HIGH SCHOOLS.

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[CONCLUDED.]

While considering the study of languages we threw a few side glances on mathematics and the natural sciences. Let us now inquire whether these, as branches of study, cannot accomplish much that is to be attained in no other way. I shall meet with no contradiction when I say that without at least an elementary mathematical and scientific education a man remains a total stranger in the world in which he lives, a stranger in the civilisation of the time that bears him. Whatever he meets in nature, or in the industrial world, either does not appeal to him at all, from his having neither eye nor ear for it, or it speaks to him in a totally unintelligible language.

A real understanding of the world and its civilisation, however, is not the only result of the study of mathematics and the physical sciences. Much more essential for the preparatory school is the *formal* cultivation which comes from these studies, the strengthening of the reason and the judgment, the exercise of the imagination. Mathematics, physics, chemistry, and the so-called descriptive sciences are so much alike in this respect, that, excepting a few points, we need not separate them in our discussion.

Logical sequence and continuity of ideas, so necessary for fruitful thought, are the results *par excellence* of mathematics; the ability to follow facts with thoughts, that is, to observe or collect experiences, is chiefly developed by the natural sciences. Whether we notice that the sides and the angles of a triangle are connected in a definite way, that an equilateral triangle possesses certain definite properties of symmetry, or whether we notice the deflexion of a magnetic needle by an electric current, the dissolution of zinc in diluted sulphuric acid, whether we remark that the wings of a butterfly are slightly colored on the under, and the fore-wings of the moth on the upper, surface: indiscriminately here we proceed from *observations*, from individual acts of immediate intuitive knowledge. The field of observations is more restricted and lies closer at hand in mathematics; it is more varied and broader but more difficult to compass in the natural sciences. The essential thing, however, is for the student to learn to make observations in all these fields. The philosophical question whether our acts of knowledge in mathematics are of a special kind is here of no importance for us. It is true, of course, that the observation can be practised by languages also. But no one, surely, will dispute, that the concrete, living pictures presented in the fields just mentioned possess different and more powerful attractions for the mind of the youth than the abstract and hazy figures which language offers, and on which the attention is certainly not so spontaneously bestowed, nor with such good results.[1]

Observation having revealed the different properties of a given geometrical or physical object, it is discovered that in many cases these properties *depend* in some way upon one another. This interdependence of properties (say that of equal sides and equal angles at the base of a triangle, the relation of pressure to motion,) is nowhere so distinctly marked, nowhere is the necessity and permanency of the interdependence so plainly noticeable, as in the fields mentioned. Hence the continuity and logical consequence of the ideas which we acquire in those fields. The relative simplicity and perspicuity of geometrical and physical relations supply here the conditions of natural and easy progress. Relations of equal simplicity are not met with in the fields which the study of language opens up. Many of you, doubtless, have often wondered at the little respect for the notions of cause and effect and their connexion that is sometimes found among professed representatives of the classical studies. The explanation is probably to be sought in the fact that the analogous relation of motive and action familiar to them from their studies, presents nothing like the clear simplicity and determinateness that the relation of cause and effect does.

That perfect mental grasp of all possible cases, that economical order and organic union of the thoughts which comes from it, which has grown for every one who has ever tasted it a permanent need which he

[1] Compare Herzen's excellent remarks, *De l'enseignement secondaire dans la suisse romande*. Lausanne, 1886.

seeks to satisfy in every new field, can be developed only by employment with the relative simplicity of mathematical and scientific investigations.

When a set of facts comes into apparent conflict with another set of facts, and a problem is presented, its solution ordinarily consists in a more refined distinction or in a more extended view of the facts, as may be aptly illustrated by Newton's solution of the problem of dispersion. When a new mathematical or scientific fact is *demonstrated*, or *explained*, such demonstration rests again simply upon showing the connexion of the new fact with the facts already known ; for example, that the radius of a circle can be laid off as chord exactly six times in the circle is explained or proved by dividing the regular hexagon inscribed in the circle into equilateral triangles. That the quantity of heat developed in a second in a wire conveying an electric current is quadrupled on the doubling of the strength of the current, we explain from the doubling of the fall of the potential due to the doubling of the current's intensity, as also from the doubling of the quantity flowing through, in a word, from the quadrupling of the work done. In point of principle, explanation and direct proof do not differ much.

He who solves scientifically a geometrical, physical, or technical problem, easily remarks that his procedure is a methodical *mental* quest, rendered possible by the economical order of the province—a simplified purposeful quest as contrasted with unmethodical, unscientific guess-work. The geometer, for example, who has to construct a circle touching two given straight lines, casts his eye over the relations of symmetry of the desired construction, and seeks the centre of his circle solely in the line of symmetry of the two straight lines. The person who wants a triangle of which two angles and the sum of the sides are given, grasps in his mind the determinateness of the form of this triangle and restricts his search for it to a certain group of triangles of the *same form*. Under very different circumstances, therefore, the simplicity, the intellectual perviousness, of the subject-matter of mathematics and natural science is felt, and promotes both the discipline and self-confidence of the reason.

Unquestionably, much more will be attained by instruction in the mathematics and the natural sciences than now is, when more natural methods are adopted. One point of importance here is that young students should not be spoiled by premature abstraction, but should be made acquainted with their material from living pictures of it before they are made to work with it by purely ratiocinative methods. A good stock of geometrical experience could be obtained, for example, from geometrical drawing and from the practical construction of models. In the place of the unfruitful method of Euclid, which is only fit for special, restricted uses, a broader and more conscious method must be adopted, as Hankel has pointed out.[1] Then, if, on reviewing geometry, and after it presents no substantial difficulties, the more general points of view, the principles of scientific method are placed in relief and brought to consciousness, as Von Nagel,[2] J. K. Becker,[3] Mann,[4] and others have well done, fruitful results will be surely attained. In the same way, the subject-matter of the natural sciences should be made familiar by pictures and experiment before a profounder and reasoned grasp of these subjects is attempted. Here the emphasis of the more general points of view is to be postponed.

Before my present audience it would be superfluous for me to contend further that mathematics and natural science are justified constituents of a sound education,—a claim that even philologists, after some resistance, have conceded. Here I may count upon assent when I say that mathematics and the natural sciences pursued alone as means of instruction yield a richer education in matter and form, a more general education, an education better adapted to the needs and spirit of the time,—than the philological branches pursued alone would yield.

But how shall this idea be realised in the curricula of our intermediate educational institutions? It is unquestionable in my mind that the German *Realschulen* and *Realgymnasien*, where the exclusive classical course is for the most part replaced by mathematics, science, and modern languages, give the *average* man a more timely education than the gymnasium proper, although they are not yet regarded as fit preparatory schools for future theologians and professional philologists. The German gymnasiums are too one-sided. With these the first changes are to be made ; of these alone we shall speak here. Possibly a *single* preparatory school, suitably planned, might serve all purposes.

Shall we, then, in our gymnasiums fill out the hours of study which stand at our disposal, or are still to be wrested from the classicists, with as great and as varied a quantity of mathematical and scientific matter as possible? Expect no such propositions from me. No one will suggest such a course who has himself been actively engaged in scientific thought. Thoughts can be awakened and fructified as a field is fructified by sunshine and rain. But thoughts cannot be juggled out and worried out by heaping up materials and the hours of instruction, nor by any sort of precepts : they must grow naturally of their own free accord. Furthermore, thoughts cannot be accumulated beyond a certain limit in a single head, any more than the produce of a field can be increased beyond all limits.

1 *Geschichte der Mathematik*, Leipsic, 1874.
2 *Geometrische Analyse*, Ulm, 1886.
3 In his text-books of elementary mathematics.
4 *Abhandlungen aus dem Gebiete der Mathematik*, Würzburg, 1883.

I believe that the amount of matter necessary for a useful education, such as should be offered to *all* the pupils of a preparatory school, is very small. If I had the requisite influence, I should, in all composure, and with the conviction of doing what was best, first greatly curtail in the lower classes the amount of matter in both the classical and the scientific courses; I should cut down considerably the number of the school hours and the work done outside the school. I am not with many teachers of opinion that ten hours work a day for a child is not too much. I am convinced that the mature men who offer this advice so lightly are themselves unable to give their attention successfully for as long a time to any subject that is new to them, (for example, to elementary mathematics or physics,) and I would ask every one who thinks the contrary to make the experiment upon himself. Learning and teaching are not routine office-work that can be kept up mechanically for any length of time. But even such work tires in the end. If our young men are not to enter the universities with blunted and impoverished minds, if they are not to leave in the preparatory schools their vital energy, which they should there gather, great changes must be made. Waiving the injurious effects of overwork upon the body, the consequences of it for the mind seem to me really dreadful.

I know nothing more terrible than the poor creatures who have learned too much. Instead of that sound powerful judgment which would probably have grown up if they had learned nothing, their thoughts creep timidly and hypnotically after words, principles, and formulæ, constantly by the same paths. What they have acquired is a spider's web of thoughts too weak to furnish sure supports, but complicated enough to produce confusion.

But how shall better methods of mathematical and scientific education be combined with the decrease of the subject matter of instruction? I think, by abandoning systematic instruction altogether, at least in so far as that is required of *all* young pupils. I see no necessity whatever that the graduates of our high schools and preparatory schools should be little philologists, and at the same time little mathematicians, physicists, and botanists; in fact, I do not see the possibility of such a result. I see in the endeavor to attain this result, in which every instructor seeks for his own branch a place apart from the others, the main mistake of our whole system. I should be satisfied if every young student could come into living contact with and pursue to their ultimate logical consequences merely a *few* mathematical or scientific discoveries. Such instruction would be mainly and naturally associated with selections from the great scientific classics. A few powerful and lucid ideas could be thus made to take root in the mind and be thoroughly worked out. This accomplished, our youth would make a different showing from what they do to-day.[1]

With John Karl Becker I am of opinion that the the utility and amount for individuals of every study should be precisely determined. All that exceeds this amount should be unconditionally banished from the lower classes. With respect to mathematics, Becker,[2] in my judgment, has admirably solved this question.

With respect to the upper classes the demand assumes a different form. Here also the amount of matter obligatory on all pupils ought not to exceed a certain limit. But in the great mass of knowledge that a young man must acquire to-day for his profession it is no longer just that ten years of his youth should be wasted with mere preludes. The upper classes should supply a truly useful preparation for the professions, and should not be modelled upon the wants merely of future lawyers, ministers, and philologists. Again, it would be both foolish and impossible to attempt to prepare the same person properly for all the different professions. In such case the function of the schools would be, as Lichtenburg feared, simply to select the persons best fitted for being drilled, whilst precisely the finest special talents, which do not submit to indiscriminate discipline, would be excluded from the contest. Hence, a certain amount of liberty in the choice of studies must be introduced in the upper classes, by means of which it will be free for every one who is clear about the choice of his profession to devote his chief attention either to the study of the philologico-historical or to that of the mathematico-scientific branches. Then the matter now treated could be retained, and in some branches, perhaps, judiciously extended,[3] without burdening the scholar with many branches or increasing the number of the hours of study. With more homogeneous work the student's capacity for work increases, one part of his labor supporting the other instead of obstructing it. If, however, a young man should subsequently choose a different profession, then it is *his* business to make up what he has lost. No harm certainly will come to society from this change, nor could it be regarded as a misfortune if philologists

[1] My idea here is an appropriate selection of readings from Galileo, Huygens, Newton, etc. The choice is so easily made that there can be no question of difficulties. The contents would be discussed with the students, and the original experiments performed with them. Those scholars alone should receive this instruction in the upper classes who did not look forward to systematical instruction in the physical sciences. I do not make this proposition of reform here for the first time. I have no doubt, moreover, that such radical changes will only be slowly introduced.

[2] *Die Mathematik als Lehrgegenstand des Gymnasiums*, Berlin, 1883.

[3] Wrong as it is to burden future physicians and scientists with Greek for the sake of the theologians and philologists, it would be just as wrong to compel theologians and philologists, on account of the physicians, to study such subjects as analytical geometry. Moreover, I cannot believe that ignorance of analytical geometry would be a serious hindrance to a physician that was otherwise well versed in quantitative thought. No special advantage generally is observable in the graduates of the Austrian gymnasiums, all of whom have studied analytical geometry. [Refers to an a sertion of Dubois-Reymond.]

and lawyers with mathematical educations or physical scientists with classical educations should now and then appear.

The view is now wide-spread that a Latin and Greek education no longer meets the general wants of the times, that a more opportune, a more "liberal" education exists. The phrase, "a liberal education," has been greatly misused. A truly liberal education is unquestionably very rare. The *schools* can hardly offer such; at best they can only bring home to the student the necessity of it. It is, then, his business to acquire, as best he can, a more or less liberal education. It would be very difficult, too, at any one time to give a definition of a "liberal" education which would satisfy every one, still more difficult to give one which would last for a hundred years. The educational ideal, in fact, is greatly different. To one, a knowledge of classical antiquity appears not too dearly bought "with early death." We have no objection to this person, or to those who think like him, pursuing their ideal after their own fashion. But we may certainly protest strongly against the realisation of such ideals on our own children. Another, Plato, for example, puts men ignorant of geometry on the same level with animals.[1] If such narrow views had the magical powers of the sorceress Circe, many a man who perhaps justly thought himself well educated would become conscious of a not very flattering transformation of himself. Let us seek, therefore, in our educational system to meet the wants of the present, and not establish prejudices for the future.

But how does it come, we must ask, that institutions so antiquated as the German gymnasiums could subsist so long in opposition to public opinion? The answer is simple. The schools were first organised by the Church; since the Reformation they have been in the hands of the State. On so large a scale, the plan presents many advantages. Means can be placed at the disposal of education such as no private source, at least in Europe, could furnish. Work can be conducted upon the same plan in many schools, and so experiments made of extensive scope which would be otherwise impossible. A single man with influence and ideas can under such circumstances do great things for the promotion of education.

But the matter has also its reverse aspect. The party in power works for its own interests, uses the schools for its special purposes. Educational competition is excluded, for all successful attempts at improvement are impossible unless undertaken or permitted by the State. By the uniformity of the people's education, a prejudice once in vogue is permanently established. The highest intelligences, the strongest wills cannot overthrow it suddenly. In fact, as everything is adapted to the view in question, a sudden change would be physically impossible. The two classes which virtually hold the reins of power in the State, the jurists and theologians, know only the one-sided, predominantly classical culture which they have acquired in the State schools, and would have this culture alone valued. Others accept this opinion from credulity; others, underestimating their true worth for society, bow before the power of the prevalent opinion; others, again, affect the opinion of the ruling classes even against their better judgment, so as to abide with the latter on the same plane of respect. I will make no charges, but I must confess that the deportment of medical men with respect to the question of the qualification of graduates of your *Realschulen* has frequently made that impression upon me. Let us remember, finally, that an influential statesman, even within the boundaries which the law and public opinion set him, can do serious harm to the cause of education by considering his own one-sided views infallible, and in enforcing them recklessly and inconsiderately—which not only *can* happen, but has, repeatedly happened.[1] The monopoly of education by the State[2] thus assumes in our eyes a somewhat different aspect. And to revert to the question above asked, there is not the slightest doubt that the German gymnasiums in their present form would have ceased to exist long ago if the State had not supported them.

All this must be changed. But the change will not be made of itself, nor without our energetic interference, and it will be made slowly. But the path is marked out for us, the will of the people must acquire and exert upon our school legislation a greater and more powerful influence. Furthermore, the questions at issue must be publicly and candidly discussed that the views of the people may be clarified. All who feel the insufficiency of the existing *régime* must combine into a powerful organisation that their views may acquire impressiveness and the opinions of the individual not die away unheard.

I recently read, gentlemen, in an excellent book of travels, that the Chinese speak with unwillingness of politics. Conversations of this sort are usually cut short with the remark that they may bother about such things whose business it is and who are paid for it. Now it seems to me that it is not only the business of the State, but a very serious concern of all of us, how our children shall be educated in the public schools at *our* cost.

1 Compare M. Cantor, *Geschichte der Mathematik*, Leipsic, 1880, Vol. I, p. 193.

1 Compare Paulsen, *l. c.*, pp. 607, 688.

2 It is to be hoped that Americans will jealously guard their schools and universities from the influence of the State.

PRE-EXISTENCE AND IMMORTALITY.

MR. LOUIS PRANG of Boston, well known to every American that is a lover of art and art-instruction, writes with reference to the article "Immortality and the Buddhist Soul-Conception," as follows:

"Its (viz., the soul's) pre-existence ere we were born? This is a stumbling-block to my comprehension of one of the attributes of *my* "karma." If we consider karma the effluence of the life of man, it becomes his creation—I create my soul, my karma, the immortal part of my existence, how then can my karma have had existence before I was born? I have tried hard to understand your reasoning as set forth in the article "Immortality and the Buddhist Soul-Conception," but so far without success, as you see from my above remarks.

"Karma and its immortality appear to me clear enough and agree fully with my way of thinking, but *that pre-existence* (except looking at it in a broader sense as the soul of all creation and therefore an integral part of the atoms of our organism) remains to me a puzzle.—Again, a philosophy of life which is so very difficult to understand, as H. Dharmapala represents it to be, must be at fault somewhere, it can never lift up the masses of mankind, it will remain a dead letter to them, as it seems to have been the case in the East. Your monism and meliorism has the advantage, therefore, over Buddhism."

Let us analyse our soul, and by so doing we shall learn to understand both its pre-existence and its immortality. We take it for granted here that we can all agree on the definition of soul as the sum of man's sensations, sentiments, thoughts, and volitions as they manifest themselves in his organism.

What is a sensation? It is a feeling of a peculiar kind indicating the presence of a correspondent irritation as its cause. Hardness or a feeling of forcible resistance indicates that our touch is confronted with a strongly cohesive body. A color-sensation reveals to us the figure of a distant object from which light is reflected in a special way. Physiology teaches us that our sensations, which are feelings especially adapted to their various irritations, depend upon the organs of sense, and the organs of sense have been moulded in a long process of evolution. The moner is a mere speck of sentient substance; it possesses neither eyes nor ears. Leaving aside the chemical complexity of living matter, all its parts are homogeneous. But by and by a division of labor takes place. The region of the skin that lies in the direction in which the little creature moves, becomes especially sensitive to light, a fact which is recognised by the development of pigment spots doing the service of primitive eyes. In the course of a further evolution, the pigment spots of the skin recede as if seeking for protection, and soon the small depression thus formed is covered by a watery fluid which by and by assumes the shape of a lense. It would lead us too far here to go over the whole history of the formation of the eye or the other senses, and it would take a specialist to do it well. Suffice it to say, that the various forms of our sense-organs are the continued function of the sense-activities of our ancestors; they are such as they are by virtue of the memory of living substance; and memory is but another name for the immortality of feelings.

The physiological aspect of memory is the preservation of form. Every sense-impression and also every reaction of sentient substance leaves a trace, which, when irritated, revives its correspondent feeling. The form of this trace is preserved in the flux of matter; an amœba, a moner, or a cell grows, and when it divides there are two individuals of the same form. The transmission of the sum-total of functions as they take place in complex organisms through the vehicle of germs is still shrouded in mystery, but there is no reason to doubt the theory that heredity is merely a peculiarly complex preservation of traces; and all organisation is due to the memory of living substance.

Now let us ask, What are thoughts and volitions? They are particularly important soul-structures, for they are peculiar to man and form the determinants of all his activity. A thought is a combination of sentiments expressed in word-symbols. Every sensation has a meaning and words denote abstracts of sensations, or subsume the meanings of many similar sensations in classes. Thoughts are transferred by the transmission of those thought-symbols or words, which, by the designation of the same thing, have acquired the same meaning. Volitions are impulses the aims of which appear clearly represented in ideas, and will is a reaction adapted to ends through the instrumentality of thought: it is purposive motion.

After these preparatory remarks we can proceed to analyse our soul and shall find that it is a combination of innumerable elements partly inherited from former generations at the start of our life, partly acquired by experience and education.

Our soul is not the ego feeling, which finds expression in the sentiment: "It is I who think." The ego-notion is only one soul-structure among many others; and it is of importance only in so far as it occupies a central position. The ego-feeling is in itself an empty thing. It is the same in kings and beggars, in sages and fools, in judges and criminals. The diversity of the various egos is constituted by the character of those other soul-structures with whom in each mind it is connected. The various functional sense-organs and those other soul-structures which constitute our sentiments, thoughts, and volitions are what Buddhists call samskâras. They have developed gradually in a slow process of evolution and they are, so to say, the substance of our soul. If soul means a metaphysical agent behind our psychic activity, Buddha denies the existence of the soul. Buddha was the first anti-metaphysician and positivist of whom we know. But if soul means these real facts of glowing

life of which we are conscious, our longings, aspirations, our knowledge, our hates and loves, our ideas and ideals, Buddha tells us that they existed before we were born, and that they will not cease to exist after death. They have been transmitted to us by inheritance and education and we in our turn transmit them with every act we do and with every word we say. Our present life is one link only in an infinite chain of life; and our soul, viz., these peculiar forms of meaning-freighted symbols, of soul-structures, is the reincarnation of former lives; our soul is a résumé of the deeds done by all our ancestors; it is the result of our karma done in previous existences; and we are the continuation of our ancestors as much as every one of to-day is the continuation of his own self of yesterday and of all the days and years before yesterday.

That we are the physical continuation of our physical parents is obvious enough, because we see the material continuity; but we are also the continuation of the mental and moral life of our spiritual parents. When Gautama Siddhârtha had become Buddha, he remained the physical son of Shuddhôdana, but he became the inheritor of the wisdom of his teachers and of all those men from whom he had learned. Buddha visited his father, and was reproached by him for begging:

"'Oh, Mahārāja,' was the reply, 'this is the custom of all our race.'

The king said: "'But we are descended from an illustrious race of warriors, and not one of them has ever begged his bread.'

"'You and your family,' answered Gautama, 'may claim descent from kings; my descent is from the prophets (Buddhas) of old, and they, begging their food, have always lived on alms. But, my father, when a man has found a hidden treasure, it is his duty first to present his father with the most precious of the jewels;' and he accordingly addressed his father on the cardinal tenet of his doctrine."

Buddha claims descent from the prophets of old. Their aspirations have impressed him and continue in his mind. In the same way, Newton is the intellectual son of Copernicus and Kepler, and Laplace is the scion of Newton. Or, to express the same truth in other words: the soul of Copernicus continues to live in Kepler, Newton, and Laplace. Furthermore, the soul of all these scientists resides in every one of us to the extent that our minds have received by study or instruction the gist of their works. Their karma is their soul, and their soul is a living presence in mankind. They did not die, and as long as life lasts on earth they cannot die.

In analysing our soul we find that it is a gathering of living sentiments and thoughts which existed long before we were born. We are the trysting-place of many souls. And this expression is no mere allegory, but a literal truth.

Our present individuality is like a new and perhaps a revised edition of an old book. You cannot say that the book as such began to exist when it came from the press. That which makes the book, its essence and its soul, existed before and has been re-embodied in the second edition.

Even the first editions of books are not creations out of nothing. They are either combinations of thoughts which existed before, or, at best, if they are what we commonly call original, bring older problems and inquiries to a certain consummation.

It is pleasant to think that among the inhabitants of our souls there are many Montagues and Capulets who fought one another in bitter hatred during their lives in the flesh. Now they meet peacefully in their later incarnation in one and the same mind, and perhaps they were not until now capable of reconciliation. The little contentions of merely personal consequence dimmed their comprehension and the veil of Mâyâ was upon their eyes. Now, since all these trivialities have been buried in the grave, their hatred has passed away, their souls have been purified, and their spiteful hostility has changed into friendly contrast.

The main difficulty in understanding the nature of the life of the soul, its past history and future destinies, is the materialism of our views. A man naturally attributes reality to the material feature only, not to the formal and spiritual. We look upon ourselves as a congregation of material atoms, while in fact we are the soul that in this concourse of atoms is formed. The atoms are an indifferent accident. Any other atoms of the same kind would do as well, and, indeed, the atoms which support our nervous life are swiftly and constantly changing. Every new moment of consciousness presupposes new oxygen, and there is not one moment in which the flame of life feeds upon the same material.

The nature of man's being does not depend upon the food he eats, but upon the impressions which, through the sense-organs, are made upon his mind. Evolution is possible only because the souls of our forefathers survive and every generation adds a share to the rich inheritance of the past. We existed in our physical and spiritual ancestors, and according to the exertions we make add to the intellectual wealth which we bequeath to future generations. The bread of the soul is the experiences we make in life, and especially the words of the wise, which implant new soul-structures into our spiritual being. Every example, which by words or deeds you set to your children, and to your friends, and also to your enemies, is a transmission of soul, and it continues to exercise its effects; it is not lost forever, nor writ into water, but remains a factor in the soul-life of your fellows. Your soul is like a seal that has been impressed into you in order to be imprinted by your conduct into the hearts of

others, thus to be duplicated and triplicated and reproduced again and again, so that when you die your soul will live according to your deeds.

So long as we are unable to recognise the pre-existence and continuance after death of our soul, we are still under the illusion of self; we still conceive the soul as a concrete entity, and have not as yet freed our mind from the metaphysics of a materialistic conception of the soul. That kind of a soul whose annihilation we believe we see in death, does not exist; while the true soul, the reality of our spiritual life is not touched by death. Both views are due to the same erroneous ego-soul conception, the Christian dogma that every soul has been created out of nothing, and that it is to continue to live after death as a distinct soul-entity, and also the contention of unbelievers who claim that the soul is utterly annihilated in death and wiped out of existence. The Christian bigot and the infidel have more in common than they are aware of.

A correct conception of the soul and its immortality will make us sober in the vanity fair of the world that surrounds us; it will elevate our aspirations and chasten the yearnings of our hearts; it will teach us to live more wisely and more morally; and practical applicability is always a good test of truth.

Let us remember in the days of our youth that our deeds do not die, but that they will stay with us as good angels or evil demons. Suppose, for instance, a youth has studied mathematics and civil engineering at college; will not the knowledge of his studies remain with him for life? The drudgery of study is transient but its usefulness is permanent. Suppose another, or even perhaps the same youth, indulges in emasculating pleasures, every act of indulgence contributes to forming bad habits, and these habits, too, are a permanent presence in the soul of a man. They continue, and the destiny of a man is in the main the product of his good and evil deeds, of his wise and foolish acts, of his commissions and omissions. But this is not all! When a man dies his actions, in their minute individuality, continue to influence the life of the race. His personality in all its characteristic features is, according to the deeds done by him, preserved in the minds of other men. His soul remains an indelible factor in the souls of the following generations. Our ancestors are dead in the flesh only, they continue to live and their dwelling-place is right here in our souls.

SCIENCE AND REFORM.

A DESPERATE EXPEDIENT.

It is always an ominous sign for the prospects of a doctrine, if its exponents have to resort to sophistry, or that still riskier expedient—an argument founded on entirely spurious premises. The apologists of alcoholic stimulants seem to have been reduced to shifts of the latter kind. "Our love of spirits," says Prof W. T. Freeman, in a contribution to the last number of *The Gentleman's Magazine*, "may simply be a hereditary ancestral habit. *The lower creatures*, as far as I know, *never refrain from alcohol in excess if they can get it. Monkeys are peculiarly fond of arrack and such stuff.*" The two last paragraphs of that statement form, all in all, about the most glaring instance of *an argumentum ad ignorantiam* found in the controversial literature of the nineteenth century. So far from exercising an irresistible attraction on the lower animals of our planet, alcohol is dreaded as an elixir of death even by creatures that feed on poison plants and substances in a state of far-gone decay. There are caterpiliars that subsist on poppy-leaves, and maggots that revel in superannuated Limburger; but alcohol in all its more concentrated forms, repels the most unfastidious of parasites, so much so, indeed, that proof-spirits can be used as a reliable antiseptic, to protect organic substances against the microbes that mediate the process of decomposition. A panful of alcohol could be safely exposed in the midst of a tropical forest; no bird or reptile would touch it; wasps would approach it only to turn away with an angry hum; four-footed animals would shrink with horror from the mere scent of the virulent liquid. The story that monkeys can be captured with alcoholic baits has been traced to the fact that they can be fuddled with a mixture of rum and syrup, provided that the saccharine elements predominate sufficiently to disguise the taste of the intoxicant. Pure rum would not attract them any more than unmixed strychnine would lure a wolf to destruction. To while away the tedium of a long voyage, sailors often teach a pet monkey to drink grog, but succeed only by methods similar to those that have turned hundreds of slum-youngsters into topers: they force the struggling teetotaler to swallow dram after dram, till the daily repetition of the dose at last begets an abnormal appetite. In the same way young apes can be afflicted with a passion for cigars, and Prof. W. T. Freeman might just as well try to defend the nicotine habit by assuring the readers of the *Magazine* that "all the lower animals will smoke to excess whenever they can get hold of a pipe."

BIOLOGICAL CURIOSA.

In the great government game-preserve of Byalistock, Russia, several hundred head of Urus cattle have been saved from extinction, and on more than one occasion have contracted family-alliances with their bovine relatives on the neighboring hill-pastures; but the attempts to perpetuate the resulting breed of hybrids have always failed. Now Capt. Charles Goodnight, of Aroyas Station, in northwestern Texas, reports the same experience with his bison-pets. Since 1878 the Captain has raised young buffaloes and tried to cross them with various breeds of domestic cattle, long-horned Mexican bulls and "muley," or hornless, cows. A great variety of curious connecting links of the two species has been the result of these experiments; but not in a single case has the owner of the ranch succeeded in multiplying an isolated herd of his half-bisons. Now, what can be the meaning of these manifold evidences of Nature's disinclination to the perpetuation of hybrids? Does it not suggest a conjecture that the distinct currents of race-tendencies, even in apparently allied species, have been worn very deep in the course of a stupendous series of ages? The six thousand years of the Mosaic Genesis may be a more eggregious underestimate than the geologist of the Dean Buckland type are as yet inclined to admit.

ORIENTAL REALISM.

The Leland Stanford University of the West continues to establish new professorships of defunct Oriental languages—cuneiform text-books and all. The more than princely liberality of the founder may justify such luxuries; but it could do no harm

to add a chair of Japanese language and literature. Unless the signs of the times are quite misleading, the day is near when the business men of the Pacific Coast will find a knowledge of that idiom quite as useful as a proficiency in the speech of their Spanish-American neighbors.

CONGRATULATIONS IN DISGUISE.

According to a cablegram of the Associated Press, the Hebrews of the Russian Empire have assured the new Czar that they "deeply share his sorrow at the untimely decease of his august predecessor." That message may have emanated from a syndicate of traders who were obliged to fall in line with other corporations, but from any other point of view a lament of the sheep over the fate of a slain wolf could not be much more astonishing. Since the death of Cardinal Ximenes the followers of Moses never had a deadlier enemy, and the exultation of their sudden deliverance may really have prompted the wish to conciliate the good will of their new ruler at any price.

ROSEBERY'S PEACE-OFFERING.

The panegyric of the Prime-Minister of Great Britain is, indeed, much less pardonable. "Alexander the Third," he said, "has consistently preserved the peace, and therefore deserves greater homage than a Cæsar or a Napoleon." Ever since his acknowledgment of a fondness for race-horses the enlightened Premier may have felt the need of a peace-offering on the altar of British bigotry, but the only fit reply to his *apocolocynthesis* would have been Jean Jacques Rousseau's remark that "though the wars of republics may be calamitous, they are far less insupportable than the peace of certain tyrants." The Gods of History have, indeed, made more than one worthless ruler the instrument of their beneficent purposes, but the deification of a brainless and heartless despot should surely require a better foundation than the circumstance that the persecution of his own subjects left him no leisure for foreign wars. The victims of his remorseless bigotry can be counted only by hundreds of thousands, and the travellers over the frozen plains of Poland witnessed scenes more horrible than those of the West Indian Sierras where Las Casas found scores of fugitive plantation-slaves prostrate and silent, or moaning faintly: "Hunger! hunger!" It might be seriously questioned if all the wars of Napoleon and Cæsar taken together caused half as much uncompensated and unremitting misery as the "peace" of Alexander the Third.

A QUESTION OF CANDOR.

Max O'Rell, in his witty comparison of "French and English Immorality," holds that the superior merit of British moralists *versus* French sinners is founded chiefly on the fact that they have learned to guzzle their toddies more inaudibly, and concludes that at bottom no nation is very much better than its neighbors, but "differs merely in its way of showing its virtues and hiding its vices." He might have added that the difference between ancient and modern civilisation could be summed up almost in the same words.

TEMPTING FORTUNE.

One of the contributors to the recent revival of Napoleon-worship notices the curious fact that in all the endless series of his table-talks the exile of Saint Helena avoided every allusion to the career of Frederic the Great. He may have dreaded the comparison of results: The conqueror of Silesia, with all his self-reliance, resembled the prudent gamester that retires with his winning, instead of doubling and doubling his stakes in reliance on the constant favor of Fortune.

JUVENTUS MUNDI RELICS.

The press-correspondents who have visited Livadia at the south end of the Crimean coast-range vie in rapturous descriptions of the scenic contrasts: the towering peaks, the Arcadian foothills, bathed by a blue summer sea; the picturesque location of Grand-Duke Constantine's summer-palace in a grove of majestic old oak-trees—the haunt of countless birds, even at this late season of the year. Yet that oak-grove is only a poor, last relic of the magnificent *sylvania* that once clothed the Mediterranean with all its bays and branch basins, and which a few degrees south of the Crimea must have come very near realising our ideal of an earthly paradise. As compared with their own glorious peninsula, the Crimea seemed so unattractive to the ancient Greeks that they shunned it as an hyperborean wilderness, and the exiled poet Ovid died of homesickness at Tomi, on the shore of the Black Sea.

FELIX L. OSWALD.

NOTES.

We have been requested to insert the following appeal in our columns:

TO THE FRIENDS OF THE FREEDMEN: If our boys and girls will send their old dolls and toys to Mrs. N. A. Rutherford, Lumberton, N. C., they can make a merry Christmas for the freedmen.

The annual subscription price of *The Open Court* will be reduced for the coming year to one dollar. The assistance of all readers of *The Open Court* is earnestly solicited in extending its circulation. *One* reader has hitherto borne ninety per cent. of its cost.

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