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THE PROBLEM OF PROGRESSIVE HEREDITY.

BY PROF. ERNST HAECKEL.*

WHEN Jean Lamarck in 1809, in his profoundly thought out *Philosophie zoologique*, laid the foundations of the theory of descent which is now universally accepted, he explained, as we know, the gradual transformation of organic forms principally by their own natural activities. The practice and use of organs strengthened them. Inactivity and disuse weakened them. Both the progressive transformation which in the first case the organ had experienced by growth, and the retrogressive alteration which in the second case it had experienced by diminution, could be transmitted by heredity to the animal's descendants. By the accumulation and settlement of these slight changes, in the course of generations, new "good," or distinct, species sprang from varieties. Of the many grand ideas in whose conception Lamarck stood far in advance of his times, the assumption of the heredity of acquired characters certainly belongs to the most significant. If he was not so fortunate in the empirical establishment of this idea and in the choice of good and appropriate examples, the fault for the most part lay in the defective condition of the biology of his time.

The greatest gap which Lamarck left in his theory of descent was filled fifty years later by Charles Darwin in his theory of natural selection. In founding his doctrine of the struggle for life, this latter inquirer discovered the most important efficient cause of historical transformations which was wanting in the speculations of his great French predecessor. Still, the theory of natural selection is not the only cause of the unparalleled success which the "Origin of Species" achieved. This success is also greatly due to the broad and ingenious use which the great English inquirer made of the stupendous advances of modern biology. Concerning the limits of action of the new factor natural selection, its own founder had at different times very different opinions. It was quite natural and pardonable that he should at first make these limits very wide; subsequently he greatly restricted them by placing more and more emphasis on the heredity of

acquired characters. In doing this, Darwin drew nearer and nearer the ideas of Lamarck, of which at first he did not have a very high opinion.

Up to this time only empirical experts, such as stock-breeders, animal-fanciers, and gardeners, who were guided solely by practical interests, had occupied themselves with the investigation of the wonderful phenomena of heredity. Darwin first subjected them to theoretical scientific investigation and brought them within reach of the methods of physiology. The problem next presented itself of a systematic classification of the various phenomena of heredity and of adaptation, a formulation of their "laws," and an understanding of their complex mutual relations. The first attempt at this solution was made by me in 1866 in my "General Morphology." In the nineteenth chapter of this work, which analyses "The Theories of Descent and Selection," I attempted a general physiological explanation of heredity and adaptation by enunciating for the first the familiar facts of propagation, and for the second, the facts of nourishment (the change of material of tissues), as the *physiological functions* of the formation of species. I classified the multifarious phenomena of heredity under nine different laws, and arranged these into two series: (1) Five laws of *conservative heredity*, (the hereditary transmission to descendants of the characters received from parents and ancestors generally,) and (2) four laws of *progressive heredity* (the hereditary transmission to descendants of characters acquired during the life of individuals).* In the richly diversified phenomena of variation and adaptation I distinguished eight separate laws and also arranged these into two series: (1) Three laws of indirect variation or *potential adaptation* (nutritive change of the organism not expressed in its own formation but in that of its descendants), and (2) five laws of direct variation or *actual adaptation* (nutritive change of the organism which directly appears in its own formation).† I have collected the gist of my discussions on heredity and adaptation as they stood in the "General Morphology," and put the results in more popular form in my "Natural History of Creation." In eight different editions of this work I have striven to improve

* This article, sent especially by Prof. Haeckel to *The Open Court* for translation, is embodied in his Introduction to Semon's *Zoological Travels in Australia and the Malay Archipelago*.

* *Gen. Morphol.*, II, pp. 170-190.

† *Gen. Morphol.*, II, pp. 191-223.

these laws by constant correction of details, but my fundamental views of this subject remain as they originally were.* From here my views passed into many other recent works.

A substantial modification of the modern views of heredity was made in 1885 by August Weismann, the distinguished Freiburg zoölogist, to whom the modern theory of evolution is indebted for much valuable improvement. In a long series of essays which he condensed in his book entitled "Germ-plasm, A Theory of Heredity," published in 1892, Weismann attempts to establish the *continuity of the germ-plasm* as the foundation of the theory of heredity. He assumes that in every organism there exist by the side of each other two wholly distinct kinds of plasm, the germ-plasm as generative material, and the body or somatic plasm as the substance out of which the tissues of the body are developed. In the process of generation one part of the parent plasm is not employed in the building up of the infant organism, but remains behind unaltered. On this unbroken continuity of the constant germ-plasm is founded heredity, whilst variation or adaptation is produced by *amphimixis*, that is, by the mixture in sexual propagation of two different, individual generative materials. For this reason, in all histones or pluricellular organisms (metaphyta and metazoa), the heredity of acquired characters does not take place, whilst in unicellular protists (protophyta and protozoa) it is admittedly effected. The latter, Weismann regards as immortal, the former only as mortal.

Weismann's doctrine of the continuity of the germ-plasm and his attempt to explain by it heredity, is at bottom a *metaphysical molecular theory* like Darwin's pangenesis or my perigenesis of plastidues or the micellar theory of Naegeli.† Its success has been a wonderful one, especially in England. Also in Germany the number of its adherents seems to grow, whilst in France and in Italy, but especially in North America, it has met with the liveliest opposition. If we look over the lists of eminent disputants arrayed against each other in this significant strife, we shall see on both sides a large number of tried natural inquirers. Among those who have openly declared in Weismann's favor are Wallace, Ray-Lankester, Galton, Poulton, Wiedersheim. Among the opponents are to be found Herbert Spencer, Huxley, Gegenbaur, Fürbringer, Eimer, Claus, Cope, and Lester F. Ward. The new school which has sprung up on the basis of Weismann's theory, and has grown very rapidly, especially in England, is often called Neo-Darwinism. But this designation is unjustified and misleading, for "heredity of acquired characters" is just as essential and indispensable an element in the evolution theory of Charles Dar-

win as it was in that of his grandfather, Erasmus, and in the apparently still remoter theory of Lamarck. The difference in the conception of these two greatest banner-bearers of the theory of descent is simply this, that Darwin did not impute to progressive heredity so prominent a part as Lamarck, but put in the foreground the idea of natural selection which was unknown to the latter. When Weismann denies the heredity of acquired characters in any form, he is, in point of principle, just as much opposed to Darwin as he is to Lamarck.

So far as my own position is concerned, I have had no occasion, despite the great progress which the theory of heredity has made in the last twenty years, to alter in any essential point the principles of my conception of it which I formed in 1866 and presented in my "General Morphology." On the contrary, my uninterrupted employment with this fundamental principle of evolution in the course of the last thirty years has convinced me more and more of the correctness of that conception. I have, therefore, stoutly opposed Weismann's theory from the beginning, and recently emphasised our differences in the last editions of my "Natural History of Creation" (1889, p. 203,) and of my "Anthropogeny" (1891, pp. XXIII, 149, 836, etc.). Here is not the place to recapitulate all the objections which I made against Weismann's doctrines, and I shall restrict myself, therefore, to the following brief statement of them :

1) The hypothetical "continuity of the germ-plasm" is neither empirically demonstrable nor theoretically admissible. The recent discoveries relative to the exacter morphological behaviour of the karyoplasm and cytoplasm in fertilisation and in the segmentation of the ovum prove nothing in its favor.

2) The hypothetical division of the germ-plasm from the somato-plasm is neither empirically observable, nor theoretically tenable; the profound *physiological correlation* of the two species of plasma, which is illustrated, for example, in the well-known effects of castration, also proves its *material continuity*.

3) The separation of the pluricellular organisms (histones) from the unicellular organisms (protists) is no absolute separation, and with regard to the special point of heredity not an essential one; in fact, among protists which are pre-eminently monogonic there may be found the beginnings of different forms of amphigony, whilst among histones, that for the most part reproduce sexually, monogony also exists to a great extent; in both groups the laws of heredity are different only in degree.

4) The unicellular protists (protophyta and protozoa) are no more immortal than the multicellular histones (metaphyta and metazoa); even in the simplest case the organic individual has only a limited

* Compare the eighth edition of 1889, pp. 157-237.

† Compare the *Natural History of Creation*, eighth edition, p. 198.

duration of life; when a cell is broken up by division into two filial cells, its individual existence is thereby destroyed. On the other hand, if we understand by immortality the continuity of the plasm in the chain of the generations, then all ancestral series, histones as well as protists, are in an equal degree "immortal"; in that case the immortality of the plasm is simply a special case of the fundamental cosmological law of *conservation of substance*.

5) Progressive heredity, as one of the most important foundations of phylogeny, is *indirectly* demonstrated by the whole empirical body of facts of comparative anatomy and ontogeny; we can explain the numberless phenomena of "adaptation" to the outside world in its real sense only by the assumption of this foundation.

6) Progressive heredity has long since been experimentally and directly proved by the experiences of artificial breeding; all experienced and expert practical breeders (stock-farmers, animal-fanciers, and gardeners) unanimously accept the heredity of acquired characters as an incontrovertible fact; only on the basis of this fact and by the exact employment of it can they successfully pursue their business.

We cannot enter here into a discussion of the extensive literature which the so-called Neo-Darwinism, more correctly termed *Weismann's plasm-theory*, has recently produced. A detailed refutation of this doctrine is given by the German, Theodore Eimer, in his work on "The Origin of Species" (1888); whilst an excellent general criticism of the theory has been made by the American philosopher and botanist, Lester F. Ward. There is space here only for special mention of one very important polemical writing against this theory, of recent date. Herbert Spencer, the acute and erudite thinker, who as a monistic philosopher has so greatly promoted the theory of evolution in the speculative field, has published within the last year in the *Contemporary Review* (February, March, and May, 1893) several essays entitled: "The Inadequacy of Natural Selection, and Professor Weismann's Theories." The weighty objections which Spencer here raises against Weismann's theory I subscribe word for word; they are in part the same which I advanced myself some time previously.

I also fully agree with Spencer when he extends his opposition to other recent modifications of the theory of descent, especially the doctrine of Naegeli and generally against all theories which seek to explain phylogeny by unknown *inner causes* as opposed to the familiar and mechanical *external causes* which are given us in adaptation and in the interaction of the organism with the surrounding external world. Here belongs especially that group of teleological theories which have accepted the so-called innate "tendency towards

ends" (*Zielstrebigkeit*) of Baer, the internal "tendency to perfection" of Naegeli, etc., etc., and which in various forms always lead to the assumption of a mystical "creative force" or "phyletic vital force." Spencer, as a monistic philosopher, is perfectly right in rejecting, individually and collectively, these half-faced teleological theories, which are really out-and-out dualistic and mystical; and in saying that in preference to such assumptions it were much better to go back to the old myth of the special creation of the single species ("The Inadequacy, etc.,").

The question here at stake is so significant, and determines so completely our general view of the world that we must lay the greatest stress on a decision between the two following alternatives: either all phylogeny is a purely mechanical process and the development of organic forms takes place wholly without a tendency to ends, and is determined solely by the physiological activity of the organs themselves (heredity, adaptation) and their relations to the external world (the struggle for life, etc.); or, this is not the case and the genealogical history of organisms *is* one of a tendency towards ends, that is to say, a teleological process guided by a premeditated "plan of creation." In the latter case we shall have to return to the anthropomorphic notion of a personal creator. And the simplest course then is to abide with Agassiz by the old creation-myth of Moses. With Spencer I am of opinion that also the theories of evolution propounded by Weismann, Naegeli, Kölliker, Baer and the rest, will lead us back to this transcendent creation, and that we have simply to choose here between two alternatives: *either mechanical evolution with heredity of acquired characters, or no natural evolution whatever.*

The apposite examples which Spencer cites for the establishment of his monistic views are in a great part taken from the comparative anatomy and physiology of vertebrates, especially from the phylogeny of their members. I also had pointed out, even before Spencer, that this very province of phenomena furnishes a host of obvious proofs for the action of natural selection and for the heredity of acquired characters. These two great principles in no respect contradict each other, as has often been erroneously maintained, but act in concert; "natural selection" constantly employs in the "struggle for life," progressive as well as conservative heredity.

The phylogeny of the extremities of vertebrates is especially instructive as a proof of progressive heredity, for various reasons. On the one hand, the skeleton of the members, with their corresponding muscular arrangements, has been subjected, through their adaptation to different purposes, to the most various transformations; while on the other, the typical composition and arrangements of the parts of the skeleton and of

the muscles is more or less retained in this adaptation by tenacious heredity. Compare, for example, to take only a single class of mammals, the locomotor legs of most beasts of prey and hoofed animals, the leaping legs of the kangaroo and the jumping-mouse, the climbing feet of the pedimanous opossums and monkeys, the digging feet of moles and field-mice, the swimming feet of beavers and seals, the floating feet of sirens and cetaceans. We are astounded at the extraordinary multiplicity and perfection with which the members of all these mammals are adapted to their special functions; while on the other hand, the constancy in the arrangement and composition of their typical skeleton-parts proves the common descent of all. With respect to the details of osteological transformation, (for example, in carpus and tarsus,) Carl Gegenbauer's classical "Researches in the Comparative Anatomy of Vertebrates" are, before all, of the highest value. The gradual transformations which have taken place in the great class of Birds have been very exhaustively treated by Max Fürbringer in his careful "Researches in the Morphology and Classification of Birds."

All these great morphological phenomena can be explained only by the assumption of functional adaptation and progressive heredity; the special habits of life and the corresponding use or disuse of special organs have here produced by "teleological mechanics" the most astounding transformations, and that coincidentally in all the portions of the members which are in correlation ("correlative adaptation"). These "acquired characters" are then transmitted by heredity to the descendants, established in the succession of the generations, and thus made substantial characteristics of the species. In this process selection has operated by way of promotion and control in no little degree. But natural selection alone, in union with Weismann's *amphimixis*, would never have been able to produce these marvellously appropriate adaptations. Spencer has very prettily shown, in his example of the jumping of the cat, how incompetent Weismann's theory is to explain such adapted transformations.

THE ORIGIN OF PROSTRATION.

BY E. P. POWELL.

IT seems difficult to account for many of our spontaneities, and our customs, on any other ground than animal descent. A dog came to my place a few weeks since, evidently lost. When I saw him and approached, he faced me, and at once laid down in an attitude of submission. Not a muscle moved except his eyes. I went nearer and looked kindly. He half arose, and dragged himself half-way to me, and dropped again. I spoke in an easy tone, "Who are you." He moved his tail in a supplicatory, kindly way. His eyes were intensely interrogative. Would he have a welcome,

or not? I said, "You look like a good dog; come here." He came with a bound to my feet; prostrated himself, and laid his chin on my foot. His eyes looked up with a pledge of loyalty. "Please sir, give me a home and I will stand by you truly." I said, "you shall be my dog. I will keep you. This is your home." He understood my looks, words, and gestures perfectly. He rose from his crouching attitude; shook out the dust; looked me in the eye for a moment, and then gambolled about me with intense delight. Our next ceremony was to share food. I took him to the house, and gave him his breakfast. Our friendship was sealed, and he became my faithful watchman.

What is this but the very same prostration and approach by degrees that we find among savages, and for that matter among civilised peoples—Aryans not always excepted? The bold uprightness of a few peoples is an innovation on a custom almost universal among human beings. The Turanians, I believe, both the more barbarous as well as the Chinese, are accustomed to express fealty by absolute prostration in the dust; while some of the Orientals place dust on their heads. The idea of the dog seems to be practically this complex one, "If you will accept my services, and allow me a home, I will be loyal to your person and property." In the case referred to, the dog, a fine fellow, immediately assumed the position of guardsman for my property, and myself. He quickly distinguished the limits of my land; and allowed no intrusion. Here was a treaty of alliance and friendship, following an act of submission to a superior. In this treaty was involved the conception of individual rights of property. The dog clearly comprehended this, and fully believed in the right of property.

So I get from my canine friend evidently a very complex set of ideas, and with it a happy method which has been inherited by us, and perpetuated in all human races. The submission of a cat is very similar; and I have a case in hand. Walking in my vineyard one day, some years since, my attention was drawn to a very large and grand-looking feline, that at first I supposed to be a neighbor's cat. But he was determined to draw my attention. He did not come to me; but, standing at a distance, apparently desired something. Then drawing slightly nearer, he laid down; and by cautious approaches at last touched me. I spoke kindly to him, and lifted the huge fellow in my arms. Up to this moment he was every way a suppliant. But when assured of a welcome, a tremulousness showed at once that he was hungry. I carried him to my house, and fed him. He ate voraciously; and had been evidently half-starved. When satisfied he began a quiet expression of the spirit of adoption: explored the place, and showed in all cat-ways his gratitude and satisfaction. "Colonel," as we called

him, had a big brain, and succeeded admirably in giving me an illustration of the same natural principle of alliance that I had seen in the dog. It was not only allegiance to the family, but a personal friendship that was declared and formed. To his death "Colonel" was my special comrade. He was not born into our family, but was adopted. The method of introduction was not unlike the primitive forms of adoption into patriarchal families: by prostration, pledge of fealty, and immediate assumption of duties in relation to the household and family. In our domesticated animals, then, I find the antecedent of all those forms by which men have been accustomed to form alliances.

The last act in every case was a touch. The dog first laid his chin on my foot, then he touched my leg and my hand with his nose; and when I sat down by him he kissed my face. The universal habit of greeting by a touch of some sort is here evidently of animal origin. With their own kind, noses are touched; but with us they touch our hands or our faces. "Colonel" rubbed himself against my legs. Lower human races, as the Fiji-Islanders, touch or rub noses. African tribes touch noses and lips. Europeans nearly always kiss. English and Americans draw back slightly and are content to touch hands. The Chinese, for sanitary purposes perhaps, and still more to express unworthiness, shake their own hands. I have watched this animal propensity still farther. I have a dog that longs much to run with the carriage. When driven back she sneaks homeward; and when overtaken lies down and offers a paw. This offering a paw is associated by her with forgiveness and good-will. As soon as it is accepted by us she evidently considers the contention ended, but does not rise until told to do so.

The analysis of touch in the cases above noted, shows two causes, (1) a tendency to embrace; and embracing means no more nor less than a desire for amours. Under all love is physical attraction. Nature, that is always differentiating, is also always uniting and blending. Animals refuse to touch except they like. Other creatures are ignored, or bitten, or wholly devoured. To touch those we love has a hundred grades of pleasure. The animal illustrates this exactly as we do. I believe those are right who consider promiscuous kissing or even promiscuous hand-shaking as an abuse of an honest and decent animal heredity. It is a confusion of individualities. In the case of babes and children, it is monstrous to allow them to be fondled by all sorts of organisms. Our social communion might thereby easily drop into social confusion, or even debauchery. But (2) the animal touches also to gather a knowledge that, with all creatures, comes through the nose. The great sense-organ of man is the eye; of the dog and cat and horse it is the nose. It is impossible for us to comprehend this directly and fully.

Yet a thoughtful study of our emotions will show us that we have not entirely lost this animal basis of judgment; that in fact we do tell ourselves very much of other people by the nose. Blind persons distinguish their friends by the smell of handkerchiefs or coats. We all do the same unconsciously. Our unconscious sensations and unconscious judgments form a splendid field for research, and a very rich one. We know far more by smell than we suppose. The vulgar classes that revel in a confusion of odors have apparently become degraded in senses as in habits. Their basis of social judgment is below that of the animals. I observe that those who have fortunately had their senses keenly educated are accustomed to judge of persons by odors. It should not be a lost power. The eye does not possess the power to cover the subtle relation of individualities; neither does the ear. The finer sense is that of smell; dishonored, as it has been, and despised, as it should not be. In an article, published in No. 245 of *The Open Court*, I referred to the fact that Australian children possess the dog sense-power of trailing people by scent. I have experimented with some care and am confident that this power is to some degree in all of us. Strong attachments are not so rigidly ideal as we like to suppose. There is a physical basis or sense basis to all our likes and dislikes. It is this which underlies the demand of refined people that their friends shall be cleanly. Our social ties have created the maxim that cleanliness is next to godliness.

In reality, then, our physical habits are found to have an animal origin. Our hand-shaking is but little more than the friendly nose-touch given by animals that meet each other. And our kissing is of the same sort. The distance is now not great till we find the origin of dancing. It seems at first glance very curious that any one should be willing to spend hours in making motions, with no end beyond the motions. But there is nothing in nature more universal than the dance. At this moment a half-dozen flies are moving in most graceful curves under my chandelier. They circle about each other in most delightful lines, and occasionally touch with a quick dart. I have no doubt that this touch is slightly electrical and pleasurable. Three kittens are outside my balcony on the driveway; and I cannot suppress a conviction that they are enjoying motion as an end. They are delightfully graceful, moving in considerable rhythm at times, and on the whole, like the lambs over the fence, surpass the grace of the ruder classes of dancers. It is a crude notion about the fire-flies, that their exquisite flights are purely for sexual attraction. It needs but a few moments' observation to determine that these charming birds of the insect world are enjoying rhythmic motion. The throb of light is the pulsation of their

pleasure. They show their happiness. The natural dance is a pure case of animal inheritance. Its artificialities and obscenities we can claim for ourselves, as the result of the more creative imagination of the human mind.

Let me add, in a note supplementary, that it is not at all impossible that much that passes for mind-reading is really dependent on a keenly educated sense of smell. I am myself so conscious of the distinct odor of a few persons that I can trace their passage for several feet, or from room to room. That this power, belonging to savage ancestors in some cases, may be regained by reversion and education is certain. To what extent we may use this sense consciously we cannot yet determine. Unconsciously there is also room for much self-deception, by attributing to a purely psychical cause that which catches a directive suggestion from a physical organ.

CURRENT TOPICS.

THE Wilson Bill having passed the House is now before the Finance Committee of the Senate, and the "consensus" of Washington gossip is that when it comes out again it will be so changed in all its features that Mr. Wilson will not know it. In addition to that, the suspicion is growing that no bill for the reduction of tariff duties can ever pass both houses of this Congress, because the "interests" are too strong. One senator is interested in iron, another in coal, another in wool, another in lumber, and almost every constituency is interested in some form of "herrings" which it wants protected at the expense of all the others. To the man interested in "herrings" of any kind the tariff question is outside of reason, science, or argument; and not until the Government finds itself in serious financial distress will any visible impression be made upon the protective system. Borrowing money in time of peace to carry on the Government is the next thing to soliciting outside relief. It is a sign of bankruptcy, not only in finances but in statesmanship. It can only be a temporary makeshift, for at last the revenues of the Government must be obtained from the resources of the nation in the form of taxes. As it was in England, so it will be here. When in 1841 the Government of that country found itself with an empty treasury, the ministers resolved that they must either borrow money or lower the tariff on imports. They decided to lower the tariff, and thus by encouraging imports increase the revenue.

As all forms of direct taxation are unpopular, because we would rather pay ten invisible dollars than two dollars that we can actually see, the Government is compelled to collect a large portion of its revenues from taxes levied on imported goods. As the income tax is unpopular because of its inquisitorial character and the unfair proportion of it that the honest man must pay; and as the Internal Revenue taxes on whiskey, tobacco, and beer, are already as large as these "interests" will permit, there is nothing but the reduction of the tariff as a revenue-raising policy. It appears by this morning's paper that Senator Jones of Arkansas, a member of the Senate Committee on Finance, at yesterday's meeting proposed to increase the tax on beer, "and," says the reporter, "there is not the slightest doubt that his proposition would have been adopted by the Committee had not the attorneys of the National Brewers' Association given notice to Mr. Voorhees the Chairman of the Committee, as they did to Mr. Wilson, that such legislation would be considered offensive and antagonistic to the

brewing and saloon-keeping interests throughout the country, and would call forth their hostility at the next congressional elections." With so many obstacles in the way of raising revenues by direct taxation, it must be raised by the indirect method of a tariff on imports; and ordinary shop-keeping sense will require that in levying customs duties, the work must be done in such a way as to produce the most money. No matter what party is in power, the Government must have money, and it can only get what it needs by lowering the duties upon imports.

Whenever I take a ride in the dismal hearse that goes by the name of a street car, I am tantalised and tormented by an advertisement that glares upon me from the panels just above the windows proclaiming with reckless audacity that at a certain pie factory in Chicago they make "pies like your mother used to make"; the most impossible miracle that ever was attempted by any mortal woman, or mortal man. Make me a pie, O, pie-maker, like my mother used to make, and then draw on me for fifty thousand dollars. A quarter section of such a pie as that would roll backward off my shoulders more years than I care to tell. It would seat me again at the little wooden table in the old home radiant in the glory that only a mother's presence can give to any home; and as the song says, it would "make me a child again just for to-night." It is not in the power of human genius to make a pie "like your mother used to make." Take all the cooks in Queen Victoria's kitchen, and give them the finest flour, and the freshest eggs, and the richest butter and milk, and rare fruits ripened in the sunshine, and spices from Arabia, and every delicious ingredient of a royal pie; then bribe them with a coronet apiece and a pension of two thousand pounds a year; and after all, they will not be able to make "pies like your mother used to make." The feat is physiologically and psychologically impossible, because nobody but your own mother ever can or ever could give to the elements of a pie that ethereal flavor, and that spiritual potency, which makes it, for you at least, a memory of home for ever. Unless all their ingredients are mixed with her love, touched by her own hands, and seasoned with her own spirit, there are no "pies like your mother used to make."

Can a man be fairly held responsible for thinking what he never said? This is a problem for the casuists, and the solution of it is of some importance to the Rev. Thomas E. Sherman, a priest who recently delivered a lecture in Chicago in defence of the Jesuits, as he had a perfect right to do. Mr. Sherman's father and grandfather were famous men, and this it is that gives to his lectures an interest they would not otherwise possess. Referring to the mob violence inflicted on some ex-priests who attempted to lecture under the auspices of a society called the A. P. A., Mr. Sherman is reported to have said: "For my own part, I have no apology to offer for the acts of Catholics in vigorous protests against those wholesale vendors of infamy. The father who slays the corrupter of his child must be left to the Almighty; the man who shoots an anarchist on sight is a public benefactor. These ex-priests are anarchists of the worst stamp." This was printed in the *Chicago Herald* from the manuscript copy of his address furnished by Mr. Sherman to that paper, and yet he never uttered the words at all. They were in the type-written sheets of another lecture, which he was preparing for some other occasion, but in handing his copy to the *Herald* he had mixed the lectures up, as Little Buttercup mixed up the babies in the play. Evidently the *Herald* is not responsible for publishing the words, for they were in the copy given to that paper; Mr. Sherman is not responsible, for he never uttered them, and there is no evidence that he ever would have spoken them at any time; and thinking at least, is free. Mr. Sherman having proved himself innocent of speaking the words, will he now disown the sentiment?

An intricate legal puzzle is now tying into double knots the brain convolutions of all the lawyers in the State of Mississippi. It appears that William Purvis, a negro, was tried for murder, convicted, and sentenced to be hanged. The sentence was affirmed by the Supreme Court, and on the 7th of February, at Columbia, the sheriff proceeded to carry it into execution. At 12:27, in the presence of a large company, the drop fell, and the culprit was "launched into eternity"—almost; for the rope broke, and Purvis fell to the ground, without having sustained any serious injury. The sheriff and his deputies were proceeding to hang the prisoner again, when a question arose as to whether or not Purvis could legally be hanged a second time. It was contended by some of the congregation that a man was entitled to be hanged right "even if he was a nigger"; and as the breaking of the rope "was not the nigger's fault," he ought not to be hanged again. It was "allowed" that if he had been responsible for the rope, the case would be different. It was conceded that Purvis had not fired the shot that killed Mr. Buckley, but he was merely one of the riotous party out of whose ranks the bullet came; and the Rev. Mr. Sibley, of the Columbia Methodist Church, much to his credit, pleading on the side of mercy, said, that as the "nigger" was only half guilty, he ought to be only half hanged. The end of it all was that the sheriff left the whole matter to "a vote of the spectators," and they decided that the "nigger" ought not to be hanged again. Thereupon the sheriff ordered Purvis back to jail, and the next day he took him to Meridian, and from there he telegraphed the facts to Governor Stone. The question bristles with law points. For instance, the day appointed in the sentence having gone by, can a new sentence be passed, and if so, who is to pronounce it? If not, can Purvis be tried again, and thus be put in jeopardy a second time? If not, can the sheriff be hanged in his place?

* * *

A cheer for the "Kearsarge" before she goes to pieces on the reef of Roncador! Farewell, old comrade, beaten at last, not in fair battle, but by a treacherous enemy hidden in the sea. The wooden hulk may be broken and scattered by the waves, but the soul of the old "Kearsarge" is immortal, an inspiration to all our surviving ships and their sailors, the sons of the old sea kings. Aye, and to the soldiers, too, as it was in that summer-time of battles in 1864, when around our camp-fires in the night we spoke of the sea-fight over there by Cherbourg, while France was looking on from the hills along the shore. Every shot from the "Kearsarge" which struck the enemy was another battle won, and when the "Alabama" sunk she carried slavery down with her to the bottom of the sea. The war history of the "Kearsarge" we know, but how much peace was in her guns is a secret we shall never know. There was warning in their voices, and that warning kept the peace, for the threatened interference by outside nations in our quarrel was indefinitely postponed. Had Winslow struck his flag that Sunday morning in that fight, we might have lost some other battles, and our cause; for aspiring foreign powers might then have openly declared against us. The victory of the "Kearsarge" was a moral reinforcement to Grant and Sherman and to the National forces everywhere, while the banner of the Union was lifted higher in the sky. In a few years at farthest the "Kearsarge" must have been laid up in hospital like a decrepit sailor, or have been ingloriously broken up for junk; but as it is, she dies on duty and at sea, where the "Kearsarge" ought to die.

BOOK NOTICES.

ROMANCE OF THE INSECT WORLD. By *L. N. Badenoch*. With Illustrations by Margaret J. D. Badenoch and Others. New York and London: Macmillan & Co. Chicago: A. C. McClurg & Co. 1893. Pp. 341. Price \$1.25.

In the author's view, the "romance" of the insect world is to be sought in the metamorphoses of insects, the food of insects,

hermit homes, social homes, and the defences of insects by color, of which subjects the work accordingly treats. These topics do indeed involve many strange and interesting features which may be justly termed "romantic," in a certain sense of that word. The book is written in a charming, facile, yet exact, style, and is exceptionally well illustrated, so far as the accuracy of the drawings is concerned. In typographical execution the book is also exceptional, and may be recommended without reserve to readers who wish, not to plunge deeply into the natural history of the insect world, but only to spend a few occasional hours in pleasant companionship with it. A glossary of scientific terms is appended to the volume, which is also supplied with a good index. μσκ

THE DISTRIBUTION OF WEALTH. By *John R. Commons*, Professor of Economics and Social Science, Indiana University. New York and London: Macmillan & Co. Chicago: A. C. McClurg & Co. 1893. 258 pages.

Those who have time to study the subject in a technical way, will find this book useful, and some parts of it are presented in an easy and popular style that anybody can understand. It is not more abstruse than other works of its kind, but it abounds, as most of them do, in subtle definitions and hard sums, not in mathematics exactly, but in logic. By the dissolving power of applied metaphysics, a house, or a tree, or a beefsteak evaporates into an economic formula, which very often conceals and protects a fallacy. For instance, in this book we learn that "a dwelling-house is in no sense social capital. When used by its owner, it is not capital, but consumption goods; but when leased by its owner it is private capital." Also, we are told that "a tree standing in a forest is land, but as soon as it is felled it becomes capital"; and a beefsteak appears to be "social capital" until it is cooked and ready to be eaten, because up to that time "utility is being added to it." Now, that sort of science is worth learning, undoubtedly, but is it worth enough to pay for the study?

It often happens that the analytical and learned explanation of a word is not so accurate as the meaning given to it by the common people, who know nothing about social or political economy; and for an example of that let us take the familiar word "rent," which everybody understands except the political economists who write so much about it and who refine it into a verbal mist. According to this book, "the rent of land is a share of the social income which goes to a certain class, not on account of the share this class has had in producing that income, but on account of the mere ownership of the conditions for its production."

The above definition of rent, besides being too much diluted, is not correct except in particular cases; as a general proposition it is unsound. The tenant farmer without any knowledge of the books, gives the correct definition when he says, "Rent is what I have to pay the landlord for the use of the farm." When asked if the rent is not "a share of the social income" produced on the land, he says, "No, the landlord gets his rent whether I make a crop or not. If I farm the land 'on shares,' his rent will then depend upon the crop."

Phrases of occult meaning used as axioms confuse the reader instead of instructing him; and when he studies them by given examples, he sometimes finds that the fact and the formula do not perfectly agree, and of this the following paragraph will serve as an illustration: "Nature supplies some needs. The most extensive in abundance, with material already prepared, as air and sunlight. These are free goods and their marginal utility is nothing. Other goods are scarce and can be obtained only when human labor controls and exploits nature. These are economic goods." The distinction is too fine for practical uses, and the evidence to support it fails. Air and sunlight are not more free than any other gifts of nature. Air and sunlight are free in public parks, but in private parks they belong to the owner of the land whereon they

rest. In the country, air and sunshine are cheap enough, but in the city they are dear; and for that reason the poor man must live in the slums. He cannot live in the country, for he must be near his work, and he cannot afford to pay the high rents charged for air and sunlight in the town. Even in the slums the rooms that receive the most air and sunshine yield the highest rent. The owner of the land owns everything above it and below it, from the centre of the earth to the sky, the air and the sunshine, too.

The superficial defects above noted, if they are defects, are common to nearly all the text-books on political economy, but in spite of them this work by Professor Commons contains much valuable information drawn from those facts of human life on which is founded the science of political economy. His critical examination of certain accepted economic theories and maxims will compel some of them to be revised and perhaps abandoned altogether.

M. M. T.

In connexion with Professor Haeckel's article in this number of *The Open Court*, and in view of the great interest which the theories of Weismann have awakened, especially in this country and in England, it will be interesting for readers to learn that Prof. GEORGE JOHN ROMANES has recently published a small work supplementary to his "Darwin and After Darwin," entitled *An Examination of Weismannism*. Professor Romanes was prevented by a severe and protracted illness from completing Part II of his work "Darwin and After Darwin," which was to deal with post-Darwinian theories, including, of course, the theories of Weismann; but as the portion dealing with Weismann was already written, and during the interval which thus elapsed Weismann's theories had been considerably extended and modified, as is seen in his recent works on *Amphimixis* and *Germ-plasm*, Professor Romanes thought it best to embody his special criticisms of Weismann in a separate volume, to be published at once. Professor Romanes's examination is mainly restricted to the elaborate system of theories which Weismann has reared upon the fundamental postulate of the non-inheritance of acquired character, but does not treat especially of this postulate itself, reserving its examination for his next volume. It is true that it is with this postulate that Weismann's name is mainly associated, but as Professor Romanes claims, his merit is that only of having called general attention to the subject and aroused a world-wide interest with reference to it; as to the postulate itself, it is one which has always been prominent in Darwinian considerations. Professor Romanes also claims to show that the question of the transmission of acquired characters was presented early in the seventies by Mr. Francis Galton in his *Theory of Heredity*, and answered by him almost in the same manner as Weismann did about ten years later. We shall not enter into the details of the criticisms of this book, which, it is unnecessary to say, are presented in the same spirited and vigorous style which distinguishes all of Professor Romanes's works and renders them such splendid reading. A glossary of technical terms is appended to the volume which will be of great help to the reader, since the terminology of this branch of natural science is multiplying so fast of late that for comfortable reading something of this kind is absolutely necessary. The book is well indexed, and contains also an excellent portrait of Weismann. (Pp. ix, 221. Price \$1.00. Chicago: The Open Court Publishing Co.)

NOTES.

Among recent noteworthy criticisms of Professor Weismann's theories our readers may be referred to that of Prof. Lloyd Morgan in *The Monist*, Vol. IV, No. 1, entitled "Dr. Weismann on Heredity and Progress." In a letter to the Editor, Professor Weismann says that his position is not correctly represented in Professor Romanes's book (see its review in this number), but he expects that all such misunderstandings as those of Mr. Romanes and Mr.

Spencer, the latter of whom he answered in *The Contemporary Review* of last year, will in time correct themselves. As to Prof. Lloyd Morgan's objections, he says these appear to him to demand a consideration, and he will in time reply to them. At present, he says, he is too much occupied with other work, but hopes he will soon be able to contribute an article on the subject for *The Monist*.

To-morrow, February 16, will be the sixtieth birthday of Ernst Haeckel. His friends, associates, and disciples from all parts of the world, having long had in mind the propriety of a personal recognition of Haeckel's great services, have decided to take advantage of this occasion and to place as a permanent memorial of the distinguished inquirer a marble bust of him in the Zoölogical Institute of Jena, the scene of his long and fruitful activity. The celebration will take place on the seventeenth. At noon the bust will be unveiled, and an address made by the Munich zoölogist Hertwig, Haeckel's oldest pupil. Dinner will be had at the Bear, and in the evening a grand Commers will be held. It will be a day of universal festivity in the old University town, in which friends, students, and colleagues will all joyfully participate. We trust that the celebration will be worthy of the occasion and the motives which prompted it; and sincerely hope that the great investigator thus so justly honored will continue for many years the work which he has done for the advancement of science. We join the friends who have the good fortune to be with him in tendering our well-wishes and congratulations.

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