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mentar su inercia; mística y mistificación en la información, de la que sólo se exime la realidad artística, por su naturaleza particular.

c) Enraizamiento, cada vez más evidente, de la creencia en la necesidad de aceptar el mito como medio de entendimiento en un mundo en el que la incoherencia sólo parece igualar a la humanidad.

Esta incoherencia y esta humanidad, resentidas cada vez más, subrayan ciertas perspectivas que dominan la reacción, ya entablada, contra la alienación del hombre por él mismo: por una parte, denuncia del mito en todos los planos, aun en el plano estético, toda vez que parezca alterar la sinceridad artística; por otra parte, investigación de los medios mediante los cuales el hombre de nuestra época puede rechazar, en el campo estudiado, el peligro que amenaza a su personalidad y a su existencia; finalmente, imposición de la verdad como postulado supremo de sabiduría y como regla efectiva de conducta. Aun si la debilidad humana ha podido crear sus ídolos, el hombre, consciente de sí mismo, puede confiarse en la autenticidad de su futuro.

NATURALISM AND EVOLUTION: A STUDY IN CONTRASTS

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AFTER COMTE, no concept of "evolution" can be understood without tracing its history, especially since this protean term has signified different things to different authorities. Moreover, viewed logically, evolution is one of those terms which unfortunately has a double meaning even in biology. It refers therein to a *fact* about certain processes of change occurring in nature as well as to a *theory* for explaining them. Consequently, to avoid confusion in semantics, we should restrict the term "evolution" in the biological context to its empirical meaning and employ "evolutionism" for its theoretical counterpart. Strictly speaking, "evolution" is one thing, "evolutionism" (theory of evolution) is another, and *debatable* thing.

As is familiar to historians of ancient Greek science and philosophy, the first recorded speculation on evolution goes back to Anaximander of Miletus and his particular naturalistic fragment that man sprang from a "fish." If we had more than a few pre-Socratic fragments to go by, Anaximander would probably qualify as the first evolutionist in the Western world, and the first evolutionary hypothesis would be, interestingly enough, the ichthyic theory of the evolution of man rather than the simian. Even so, naturalism as a philosophy and evolutionism as a theory of nature became closely linked with each other only after the second half of the last century, especially with the advent of Charles Darwin and his epoch-making scientific attempt in *The Origin of Species* (1859) and *The Descent of Man* (1871) to explain the evolution of life empirically "by means of natural selection." Since then the New Naturalism as a philosophical movement has thrived mainly in America, where it is still vital, in spite of certain appearances to the contrary. One concrete proof of its vitality, as we are about to illustrate, is that the Darwinian heritage has itself inspired contemporary American

naturalists to propose important variations on the theme of evolution which presuppose but go beyond Darwin himself.

The interplay of naturalism and evolution covers such a multitude of persons and places that we must for lack of space be selective here. Fortunately, however, our selection of the pertinent material does not have to be purely arbitrary, inasmuch as evolutionary concepts associated some way or other with Darwin have served as a major stimulus of thought primarily in two countries, England and America, and chiefly in two areas of philosophy, metaphysics and social ethics. In the first or metaphysical area, evolution as a new way of approaching the fact of development has been utilized for decades by a large and influential number of philosophers in America in order to lend empirical support to a naturalistic metaphysics, thereby restoring the continuity between nature and man. In the second or socio-ethical area, many biological and social thinkers in America and elsewhere have been continuously advocating for almost a century now the application of Darwinian principles of evolution to problems of moral and social life. In these two particular areas of inquiry, metaphysical and ethical, the impact of Darwin's work on naturalistic thought has been so far-reaching in America that she has been christened in retrospect "the Darwinian country."¹

In view of the foregoing it will be advisable to divide this essay into two parts. The first part will be devoted to a short comparison of Frederick J.E. Woodbridge (1867-1940) and William P. Montague (1873-1953) in their respective rôles as distinct representatives of those contemporary American naturalists who have addressed themselves to the general import of modern evolution for philosophy. The second part will touch briefly on how the eventual dispute among the disciples of Darwin in biology proper, with respect to his precise conception of evolution, finds expression in the moral and social doctrines of Darwinism, old and new.

Woodbridge and Montague as Epic Naturalists and Evolutionists

If Charles S. Peirce (1839-1914) and William James (1842-1910) may be said to belong to the initial period of the so-called "Golden Age of American Philosophy," we may say that Woodbridge and Montague belong to its final period. Recently, in an autobiographical mood and advisory

¹ HOFSTADTER, R., *Social Darwinism in American Thought*, Rev. ed., Boston, 1955, p. 4.

capacity as the grand-old-champion of Evolutionary Naturalism today in the U.S.A., the late Roy Wood Sellars (1880-1973) declared that he for one could not help but "take evolution seriously."² Now, although Woodbridge from his first article, "The Argument from Design as Affected by the Theory of Evolution" (1894),³ to his last book, *An Essay on Nature* (1940), apparently paid more continual attention over the years to the subject of evolution than Montague, he actually took it less seriously than his younger colleague at Columbia University. But, before showing how their difference in appraisal regarding the significance of the subject expresses itself technically, what do they share in spirit as naturalistic apologists for evolution?

Woodbridge and Montague not only are fond of reading the great book of nature in evolutionary terms of one sort or another, but they read it with *epic* eyes, essentially. In fact, more revealing in the long run than their evolutionary presuppositions about nature is their epic preconception of life itself. That the two men as typical Anglo-Americans interpret natural evolution epically is no surprise culturally. The most spectacular evidence that the American way of life is epic at heart comes from the two glorious feats marking the history of America: the original landing of the Pilgrims on Plymouth Rock and the subsequent landing of the astronauts on the moon. To be sure, Woodbridge and Montague as American philosophers are neither early 17th-century Pilgrims nor late 20th-century astronauts out to succeed at any cost and at whatever risk by overcoming practically insurmountable obstacles, but they too have an epic sense of life, however subdued and sophisticated. In no other aspect of their naturalistic thought is this better revealed than in their common outlook on evolution.

The clearest statement of Woodbridge's epic perspective on life and evolution is found in a commemorative address delivered in 1911. In it he chides those narrow-minded scientific thinkers who "take the knowledge that matter is heartless, or that mechanism is careless of results, or that the fittest survive and the dead are dust, as the organon for the enthusiasm of men. So to take that knowledge, is to deny to man a thing of which he is capable, the thing that turns his life into an epic. And, believe me, there is an epic in this universe of ours as surely as there is an evolution."⁴ It should be added,

² SELLARS, R. W., *Some Questions and Suggestions: An Expostulation*, in "Journal of Philosophy," LXVI, 1969, p. 859.

³ WOODBRIDGE, F. J. E., *Nature and Mind*, New York, 1937, pp. 29-36.

⁴ *Ibid.*, p. 456.

however, that this *confessio fidei* is more characteristic of the earlier Woodbridge than the author of *An Essay on Nature*, which is not only his last book but his last testament also. Though still an evolutionary naturalist in a way, the later Woodbridge lacks the epic "enthusiasm" of his younger optimistic days.

As to Montague's expression of the epic spirit of optimism in relation to evolution, it comes out best in his autobiographical essay, "Confessions of an Animistic Materialist" (1930), where he dares to speculate that "the epic of cosmic evolution would consist in the uncertain, imperfect, and interrupted, but generally progressive, leavening of an infinite chaos by the element in it of divine love and good. This little yet perfect thing working in the heart of all things we can symbolize as Prometheus or as Christ, the finite will of a God whose essence and substance are all comprehending and infinite."⁵ Montague is no doubt well aware of his "hazardous and far-flung speculation" on the evolution of the universe, but quite apart from its validity it does constitute his Promethean attempt to make a cosmic epic out of the gran story of evolution.

Turning next to how Woodbridge and Montague differ philosophically as naturalistic interpreters of evolution, we must first dispose of a terminological problem on our hands. The former preferred to call himself a "naturalist," while the latter referred to himself as an "animistic materialist," preferring the tougher to the softer label.⁶ However tedious this issue of proper nomenclature may sound, it actually provides us with a telling clue as to why Woodbridge and Montague differ in their appraisals and interpretations of evolution.

Historically, their difference may be traced all the way back to the two distinct types of naturalism persisting since ancient Greek philosophy. The earlier of the two is, of course, the reductionistic type associated with Democritus the rationalistic materialist, the later being the anti-reductionistic associated with Aristotle the empirical naturalist. Accordingly, whereas Montague as a neo-materialist is an updated Democritus tinged with Bergson, Woodbridge as a neo-naturalist is an updated Aristotle tinged with Santayana. Therefore, whatever differences Montague and Woodbridge have as evolutionists stem ultimately from an original difference in their genealogy as naturalists in philosophy. We are now ready to compare *in nuce* our two contemporary American naturalists as philosophers of evolution.

⁵ MONTAGUE, W. P., *The Ways of Things*, New York, 1940, p. 665.

⁶ *Ibid.*, p. 90; WOODBRIDGE, *ibid.*, pp. 255-56.

To begin with Montague, the publication which reflects perhaps best of all that he is philosophically on the side of Democritus, is "A Materialistic Theory of Emergent Evolution" (1929). The essay defends a "quantitative interpretation of the various qualitative levels of life that successively emerge in the course of evolution. The whole process of development from the simplest protoplasm to the highest forms of spiritual life is depicted as a transformation of mechanical or externally determined systems in which kinetic energy is dominant into teleological or self-determining systems in which potential energy is dominant."⁷ In other words, what the "atom" is to Democritus, the physical category of "energy" (kinetic and potential) is to Montague. Time does not permit us to deal with Montague's ingenious hypothesis of mind or consciousness as a special form of potential energy.⁸

To appreciate better why Montague insists on interpreting Emergent Evolution "materialistically," that is, in quantitative or commensurable terms, we must go to what he finds wrong with that particular evolutionary theory associated usually with the name of Samuel Alexander (1859-1938) of Australia. Otherwise we will be in no position to arrive at the exact difference between Montague's interpretation of evolution and Woodbridge's. At any rate, what Montague finds highly objectionable in the doctrine of emergent evolution is its acquiescent attitude of "natural piety" towards the unpredictable emergence of novelties in nature. With characteristic frankness, he attacks such attitude as "scientific treason," because in his opinion our task as investigators is not to accept piously the "emergence of the new and higher levels of being" as "brute facts," but rather to explain them "analytically" by "*rational etiology*," yet without eliminating their unique qualitative properties themselves.⁹

This stubborn quest, on Montague's part, for a thoroughly quantitative explanation of the qualitative changes emerging in the course of evolution by recourse to purely physical principles and forms of energy, is precisely what Woodbridge denies as an adequate approach to understanding nature and man. For one thing, there is too much Locke, as well as too much Aristotle, in Woodbridge for him to have Montague's metaphysical confidence in the cognitive possibilities of mathematical physics. For another, though

⁷ *Ibid.*, p. 418.

⁸ Cfr. ROMANELL, P., *The Leading Idea in Montague's Philosophy*, in "Journal of Philosophy," LI, 1954, pp. 619-24, in particular p. 621.

⁹ MONTAGUE, *op. cit.*, pp. 427-30. Cfr. ALEXANDER, S., *Natural Piety*, in "Hibbert Journal," XX, 1922, pp. 609-21.

Woodbridge to my knowledge did not make any special comments in print on the theory of emergent evolution itself, he was himself too imbued with a "sense of piety"¹⁰ to protest with Montague against its attitude of "natural piety."

According to Woodbridge, "the fruitful approach to a theory of nature is from an initial emphasis on life."¹¹ Starting with the primacy of biological categories, he remarks in a public lecture of 1935 as if he has Montague in mind, "one whose thinking has been largely controlled by physicists may find it advantageous to let it be controlled for a season by biologists and examine the evidence that their work affords" concerning the place of "natural teleology" in the scheme of things.¹² The contrast between Woodbridge's call for an interpretation of nature and evolution from the vantage point of the *biologist*, on the one hand, and Montague's from that of the *physicist*, on the other, could hardly be more pronounced.

However, despite their fundamental differences in points of departure and controlling categories, there is one central category that the two men share, namely, the biological category of "potentiality." But, on account of their common epic horizon, it is often used interchangeably with the category of "possibility." Neither Woodbridge¹³ nor Montague¹⁴ seems to be aware of the crucial difference between the Aristotelian category of "potentiality" and the Existentialist category of "possibility"—a difference first made clear and given due importance in contemporary Italian philosophy by Nicola Abbagnano.¹⁵

In the spring of 1935 I was fortunate to take a graduate course on "Theory of Nature" with Woodbridge at Columbia University. The following excerpts taken from my notes in the course strike me as more indicative of how he felt about the whole doctrine of modern evolution than what he said in print during his lifetime: "Evolution and progress are superstitions. I hope you outgrow them" (February 27, 1935). "Evolution is a fact. Yet there are many controversies about it. Aristotle and Darwin are pretty much alike"

¹⁰ WOODBRIDGE, *op. cit.*, p. 456.

¹¹ *Ibid.*, p. 275.

¹² *Ibid.*, pp. 293-94, 113-33.

¹³ WOODBRIDGE, *op. cit.*, pp. 51-3, 258, 303-06; *An Essay on Nature*, New York, 1940, p. 150, 211, 264, 267, 274, 305.

¹⁴ MONTAGUE, *op. cit.*, pp. 267, 275, 408-417, 502, 592-94, in particular p. 501.

¹⁵ Cfr. ROMANELL, P., *Abbagnano, Nicola*, in *Encyclopedia of Philosophy* (Editor, Paul Edwards), I, New York, 1967, pp. 1-2.

(April 29, 1935). "Adam was the first Darwin. Adam named Nature" (May 1, 1935).

It is hoped that these few excerpts from the unpublished Woodbridge will show why he took modern theories of evolution less seriously than Montague. The reason, to put it in a Shakespearean vein, is not that he loved Darwin less, but that he loved Aristotle more.¹⁶ And of all of the writings published by Woodbridge himself, the one which perhaps spells out best where he stands with respect to evolution, is the booklet entitled *The Purpose of History* (1916). There he identifies evolution with the idea of "historical continuity." There also he admits that the modern doctrine of evolution "wrought a real emancipation of the mind" by making "the fact of continuity convincingly apparent."¹⁷ Yet, at the same time, he asserts that the obvious fact of evolution or continuity of itself "teaches no lesson in morals and provides no guide to the perplexed."¹⁸ In contrast to Montague, who as a persistent critic of the relativistic theory of truth categorically questions the relevance of evolution for epistemology but grants its relevance for ethics,¹⁹ Woodbridge would contend that evolution as such is relevant to "the pursuit of knowledge" but irrelevant to "the pursuit of happiness."²⁰ This leads us to the second or ethical part of our brief comparative study of naturalism and evolution.

Moral and Social Darwinism, Old and New

What atomism was to the Epicureans in the ancient world, evolutionism is to the Darwinians in the modern. Just as the Democritean theory of the atoms was transformed by the former into a guide to personal peace of mind or spiritual survival, so the Darwinian doctrine of evolution has been adapted by the latter as a guide to physical and social survival. But, with the birth and proliferation of moral and social theories stemming from Darwinian biology, there arose eventually a serious difference of opinion among the disciples of Darwin regarding the actual meaning of evolution

¹⁶ Cfr. WOODBRIDGE, F. J. E., *Aristotle's Vision of Nature* (Editor, J. H. Randall, Jr.), New York, 1965.

¹⁷ WOODBRIDGE, F. J. E., *The Purpose of History*, New York, 1916, pp. 70-71.

¹⁸ *Ibid.*, p. 74. Cfr. WOODBRIDGE, F. J. E., *The Realm of Mind*, New York 1926, pp. 106-110.

¹⁹ MONTAGUE, W. P., *The Ways of Knowing*, London, 1925, pp. 163-64.

²⁰ WOODBRIDGE, *An Essay on Nature*, pp. v-x, 331-38, in particular, p. 290.

in the master and its implications for morality and society.²¹ While the earlier Spencerian generation of Darwinians was content to interpret, literally, nature's evolutionary processes in Darwin's terms of "the struggle for life," and, as a result, saw moral and social evolution in the same *competitive* terms, the subsequent Kropotkinian generation on the contrary has been inclined to view the whole story in *cooperative* terms.

The man who foreshadows the split within the Darwinian camp into two groups of social moralists and represents the critical period of transition between the earlier and later generation of evolutionary naturalists, is Thomas H. Huxley, a physician by training and the greatest advocate of the New Biology in the Victorian Age. Surprisingly enough, Huxley is a complete Darwinian in biology, but not in ethics. In fact, in his widely discussed essay *Evolution and Ethics* (1893), he calls so much attention to the fallacies inherent in the "ethics of evolution" that one is left wondering as to whether there is any validity to it at all for him. In any event, Huxley assumes a radical duality between "the cosmic process" and "the ethical process," argues that social progress "means a checking" of the former by the latter, and "repudiates" on moral grounds the Darwinian view of nature for its ruthlessness, describing it colorfully as "the gladiatorial theory of existence."²²

As I see it, the most telling feature of Huxley's peculiar position in *Evolution and Ethics* is that he is faced with a *tragic* dilemma as a convinced Darwinian in biology. The dilemma is implicit in an open declaration of his at the outset: "Whatever difference of opinion may exist among experts, there is a general consensus that the ape and tiger methods of the struggle for existence are not reconcilable with sound ethical principles."²³ Like every tragic soul, Huxley is confronted with an unavoidable conflict of interests. In his particular instance, the conflict arises because he holds two incompatible beliefs simultaneously. One is what he firmly believes as a Darwinian evolutionist, the other as a Stoic moralist. The two beliefs clash in his mind and, though he has trouble resolving his own dilemma, he at least recognizes that "the gladiatorial theory of existence" is no model for ethics.

Now, once it is understood that the reason for Huxley's actual predica-

²¹ Cfr. LEAKE, C. D., and ROMANELL, P., *Can We Agree? A Scientist and a Philosopher Argue about Ethics*, Austin, 1950; ROMANELL, P., *Ethical Problems and Scientific Method*, in "Ethics", LX, 1950, pp. 294-95; ROMANELL, P., *Il naturalismo critico*, Torino, 1969, pp. 69-94.

²² HUXLEY, T. H., *Evolution and Ethics*, London 1893, p. 33.

²³ *Ibid.*, p. 7.

ment was due to his particular reading of Darwin in the rugged individualistic term of his own generation of evolutionary naturalists, it was not too long before a neat way out of the problem was found by the subsequent generation of Darwinians. The available strategy was, obviously, to question the adequacy of the original reading of Darwin in the catchwords of "the struggle for existence" and "the survival of the fittest" exclusively, by denying on empirical grounds the previously accepted primacy of the factor of "mutual struggle" in Darwin's conception of evolution, or, stated positively, by shifting the emphasis to the complementary factor of "mutual aid" in the master himself.²⁴ This is precisely the resolution of Huxley's dilemma advanced by Prince Kropotkin at the beginning of the century in his book, *Mutual Aid a Factor of Evolution* (1902), and what many of the contemporary neo-Darwinians in the moral and social field, with or without acknowledgment, have done since then is to incorporate the Russian evolutionist's hypothesis of "mutual aid" into their own systems of evolutionary thought.²⁵

As to the reason for the original popularity of the ruthless form of evolutionary ethics in the late 19th century, here is how one of the neo-Darwinians in contemporary America has explained it, on looking back at his Spencerian predecessors: "such tooth-and-claw ethics," in a phrase after Tennyson, "suited the book of Victorian laissez faire capitalism and, also, with only rather superficial remodeling, of its opposing ideology in Marxist socialism."²⁶ This critique of the old social Darwinism on ideological grounds gets reinforced by another, which rests on logical grounds, as follows: "Omitting important facts and basing their arguments on false premises the tough Darwinians could only arrive at false conclusions."²⁷ As a consequence, of such empirical omission and false reasoning on their part, this neo-Darwinian naturally draws the conclusion that the immediate disciples of Darwin failed to appreciate the moral of the entire story of evolution, to wit: "To love thy neighbor as thyself is not simply good text for Sunday morning sermons, but perfectly sound biology."²⁸ In fine, whereas the original generation of "the tough Darwinians" used to read the evolutionary story of life in terms

²⁴ KROPOTKIN, P. A., *Ethics: Origin and Development*, trs., L. S. Friedland and J. R. Piroshnikoff, New York, 1924, pp. 13-14.

²⁵ Cfr. HERRICK, C. J., *The Evolution of Human Nature*, Austin 1956; WADDINGTON, C. H., *The Ethical Animal*, London, 1960.

²⁶ SIMPSON, G. G. *The Meaning of Evolution*, New Haven, 1949, p. 298.

²⁷ ASHLEY MONTAGU, M. F., *The Origin and Nature of Social Life and the Biological Basis of Cooperation*, in "Journal of Social Psychology," XXIX, 1949, p. 274.

²⁸ *Ibid.*, p. 281.

of the Iron Rule of Spencerian ethics, those who could well be named "the soft Darwinians," by contrast, evidently read it today in terms of the Golden Rule of Christian ethics.

It is indeed comforting to hear from one of the current followers of Darwin that the Christian commandment of neighborly love not only meets the requirement of a good religion but, in addition, gets the blessings of the latest word in biology. Nevertheless, the new conclusions of "the soft Darwinians," whose general picture of Nature, in contradistinction to "the gladiatorial theory of existence," may be named (with out offense) "the boy scout theory of evolution," suffer from a fallacy opposite to that of "the tough Darwinians." While the earlier generation of evolutionary naturalists used to commit the fallacy of *false* premise in ethics and social philosophy, the newer generation may be said to commit the fallacy of *true* premise. For, granting that the organic world is more of a cooperative than a competitive affair on a grand scale, this fact does not of itself necessarily prove that cooperation is morally better than competition in our dealings with each other.

Even if we granted the moral superiority of cooperation over competition, its superiority could not be proven by simply appealing to a "principle of mutualism"²⁹ governing living organisms. Why not? If "the ethical conception of love" or the "principle of cooperation" is "grounded in the biological structure of man as a functioning organism," then it follows that all moral effort on his part is absolutely superfluous, since he "is born with an innate need for love" and his "cooperative behavior" is assumed to be "innate" likewise.³⁰ And if all our moral and social behavior is "innate" to human nature, conceived in necessitarian fashion, then it makes no difference from an ethical standpoint whether we say that man is competitive or cooperative in essence, that cooperation is morally superior or inferior to competition, because in any case he has no choice or freedom to act otherwise, *ex hypothesi*. In a word, the biological doctrine of innatism negates the *raison d'être* of ethics as such by simply removing the real need for it in a world where the moral itself is *guaranteed* in advance. Besides, cooperation in its moral context is not always good, nor for that matter is competition always bad. The gang world illustrates the truth of the first, the sports world that of the second.

In the final analysis, the only real difference between the old Darwinism and the new as regards the moral and social aspects of evolution turns out

²⁹ *Ibid.*, p. 272.

³⁰ *Ibid.*, p. 280.

to be essentially one in ideology. In contrast to the previous generation of "the tough Darwinians," who went presumably to Darwin to seek backing for the social value of competition in vogue at the time and found it in his cardinal idea that adaptability to changes in the environment is the key to survival, "the soft Darwinians" at present are returning to the same idea in order to justify the social value of cooperation to contemporary men. This new look at the master's great work in biology is doubtless very meaningful from the viewpoint of cultural relativity, because it is another reminder that any shift in social thinking reflects the set of values at stake in a particular culture at a specific period in human history.

Yet, ironically enough, the new cultural phenomenon has little bearing, if any, on the course of natural evolution itself. For, to close this study in contrasts of Naturalism and Darwinism with what I said in an earlier article on the subject, "it should be pretty plain that Nature's face and the behavior of the species themselves have not changed much in the last hundred years, and that whatever evidence of cooperative activity biologists find now in the animal kingdom was accessible to their colleagues a century ago. So the change then in perspective from the old social Darwinism to the new must be attributed, at bottom, not really to a reassessment of the biological evidence at hand, but primarily to the moral growth of that rare species taxonomically labeled *homo sapiens*— man himself— who is beginning to realize at long last that mutual cooperation among free men and responsible nations is the only sensible alternative to mutual annihilation in a nuclear world."³¹

³¹ ROMANELL, P. *Social Darwinism, Old and New*, in *Actas: Segundo Congreso Extraordinario Interamericano de Filosofía*, San José (Costa Rica) 1962, pp. 140-41. Cfr. RENÉ DUBOS, *Man, Medicine, and Environment*, New York 1968, p. 6: "Scientists might like to believe that the change from tooth and claw ethics to social liberalism is a consequence of greater biological knowledge, but there is no basis for this flattering assumption. Nature and the interplay between living organisms have not changed in the past 100 years. In particular, the various forms of cooperative activity in the animal kingdom were as readily accessible for observation and study to Victorian naturalists as they are now to modern biologists. It is probable that the scientific evidence for a liberal social policy as against 19th-century social Darwinism does not come from a reassessment of old biological information, but rather from the search for new kinds of information."