$1.00 per Year FEBRUARY, 1914 Price, 10 Cents

The Open Court

A MONTHLY MAGAZINE

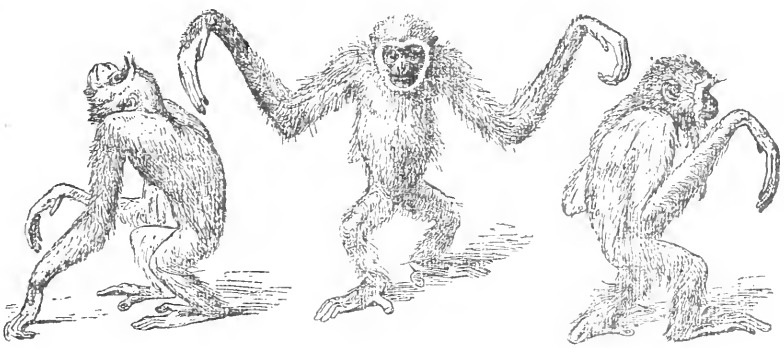
Devoted to the Science of Religion, the Religion of Science, and the Extension of the Religious Parliament Idea

Founded by EDWARD C. HEGELER

In Celebration of

Professor Ernst Haeckel's Eightieth Birthday

February 16, 1914



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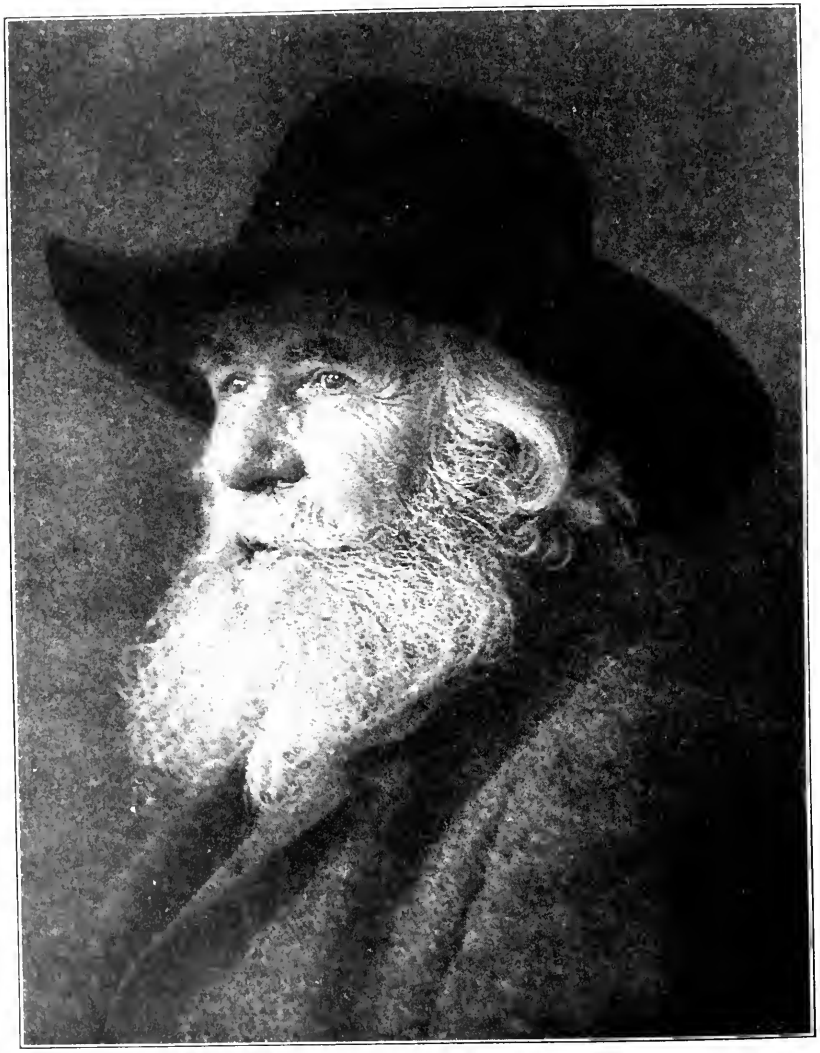

Ernst Haeckel.

From a photograph taken October 18, 1913.

Frontispiece to The Open Court.

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HAECKEL'S BIRTHDAY.

BY THE EDITOR.

PROFESSOR ERNST HAECKEL will celebrate his eightieth birthday on February 16, 1914, and a movement has been started to honor the venerable pioneer of monistic thought with tributes and ovations. In anticipation of further plans Professor Haeckel publishes the following open letter to his friends, pupils and followers:

"I have been informed from several quarters that a number of my friends, pupils and followers intend to celebrate my approaching eightieth birthday by donations and other testimonials, about the form and nature of which different proposals have been made. Having been honored repeatedly on former occasions by similar presentations, I beg leave to request that this time all such personal gifts to myself be omitted and that the amounts intended for this purpose be applied to a foundation which I should wish put at the disposal of the German Monistic League. This league founded in the interest of furthering civilization deserves support by greater financial aid on account of the wonderful development it has reached since its foundation seven years ago, and on account of its importance for the attainment of a liberal and rational world-conception, as well as for the practical application of this world-conception toward a higher moral conduct of life.

"The contemplated 'Ernst Haeckel Fund for Monism' is intended permanently to promote this humanizing work on the secure basis of natural science and to furnish the necessary means for the practical performance of its numerous important tasks. To all

friends and all sharing my views who desire to support my long life-work by contributing to this fund I hereby express in advance my most cordial thanks.

"At the first international congress of monists which took place in September 1911 in Hamburg, and which was especially successful because of the large numbers who attended, including a wide representation from foreign countries, the effort was made to extend the German Monistic League into an international society.

HAECKEL ON THE STREETS OF JENA (1907).

This universal monistic league, representing a powerful advance in our cultural tasks by uniting liberal thinkers of all countries, will be the more able practically to verify its importance the more liberally my friends in all parts of the world will share in contributing towards the new foundation."

[Contributions may be made payable to the "Ernst-Haeckel-Schatz für Monismus," and addressed to "Deutsche Bank, Filiale Hamburg, Germany." All inquiries and other correspondence should be ad-

dressed to the "Ernst-Haeckel-Schatz für Monismus, Hamburg 36, Klein Fontenay Nr. 1."]

The present number of *The Open Court* contains Haeckel's own most recent article in which he outlines his position. We further publish a discussion of his work by one of his most ardent supporters, Dr. W. Breitenbach, the editor of the *Neue Weltanschauung*.[1]

VIEW FROM HAECKEL'S STUDY WINDOW.

Professor Haeckel's work is continued by Prof. Wilhelm Ostwald, whose prominent position as a scientist and philosopher renders him most fit for leadership.

It will be noticed that Dr. Breitenbach is not in full agreement with the *Monistenbund,* and so far as we know he has not even joined its ranks, but on this day of rejoicing he does not keep aloof

[1] The editor's address is Brackwede i. W., and the publishers of the *Neue Weltanschauung* are Hausbücher-Verlag Hans Schnippel, Berlin-Halensee, Hektorstr. 20.

and raises his voice in the interest of the cause. Professor Haeckel himself stands above the differences of sectarian interpretations of monism. Though the movement may in some details not be quite satisfactory to his ideals, our octogenarian takes a friendly attitude towards all his friends and adherents, hoping that wherever they, or even he himself, may be mistaken their errors will by and by be overcome and their purpose will be more and more matured.

We too have our own conception of monism. We too insist on the significance of certain truths which should be heeded, and we may also now and then have occasion to criticize other monisms. But we have never failed to recognize the historical significance of Professor Haeckel's work and we take this opportunity on his eightieth birthday to congratulate him on what he has accomplished during the long and fruitful career of his scientific work.

THE BOUNDARIES OF NATURAL SCIENCE.[1]

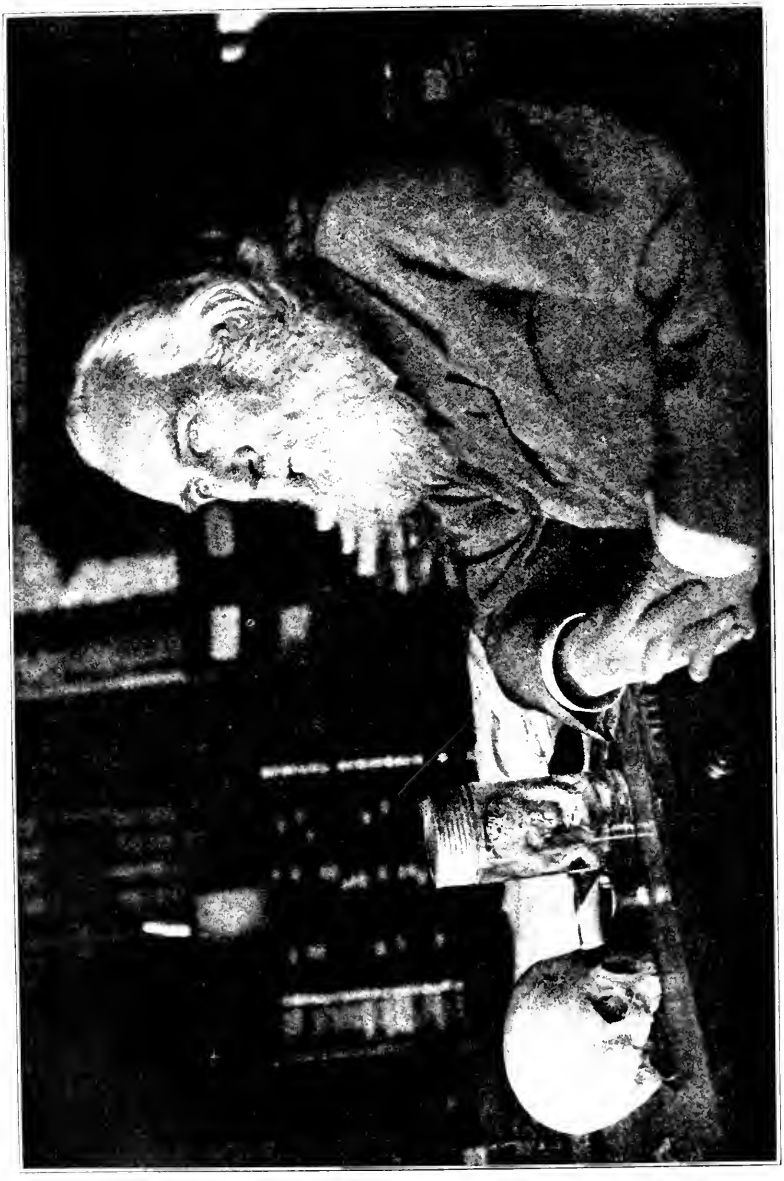
BY ERNST HAECKEL.

THE meeting of German naturalists and physicians of 1913 may look back more proudly than ever before upon the wonderful results accomplished by natural science in the last half century. In each one of its many sections there was opportunity to admire the marvelous immensity of the progress recently attained and to emphasize its practical significance for our modern culture. But disregarding all the separate brilliant results of the particular sciences and rising to the most comprehensive survey of the magnificent whole, the most gratifying result of all, indeed, remains the conviction that the study of nature has gradually taken by storm the entire domain of the human intellect, that *all* true "science" in the last analysis is *natural* science.

To be sure this legitimate claim is still opposed even to-day in large circles as an unwarranted presumption; the so-called mental sciences are opposed to the natural sciences as being of equal, or rather of superior, value. But unprejudiced comparison and critical investigation (free from all traditional dogmas) convince us that all branches of the former should be classified in the all-embracing domain of the latter. History in its broader sense—universal history as well as the history of the nations, the history of the earth and natural history—all are branches of the general theory of evolution. The philological sciences, comparative study of languages and psychology, are parts of physiology. Philosophy as the proud "queen of the sciences," gathering all general results of the special branches into the common focus of its "world-conception," has lasting value only as it is the monistic philosophy of nature. The an-

[1] On the occasion of the triennial meeting of naturalists at Vienna Professor Haeckel published this brief essay in the *Neue Freie Presse* in a somewhat abbreviated form. With the author's permission this was republished in the *Neue Weltanschauung* of October 1913, including the parts which had been previously omitted. From this more complete form it is here translated into English by Lydia G. Robinson.

cient traditional antitheses of spirit and body, energy and matter, *psyche* and *physis*, fuse into its unified concept of substance.



HAECKEL IN HIS STUDY (1907).
Photograph by Paul Carus.

The opposition which our firmly established unitary world-conception—"naturalistic monism"—still meets constantly from con-

servative and clerical circles, rests particularly upon the old vitalism, upon the dualistic hypothesis that a special life force (*vis vitalis*) creates the phenomena peculiar to organic life independently of universally prevailing physical laws.

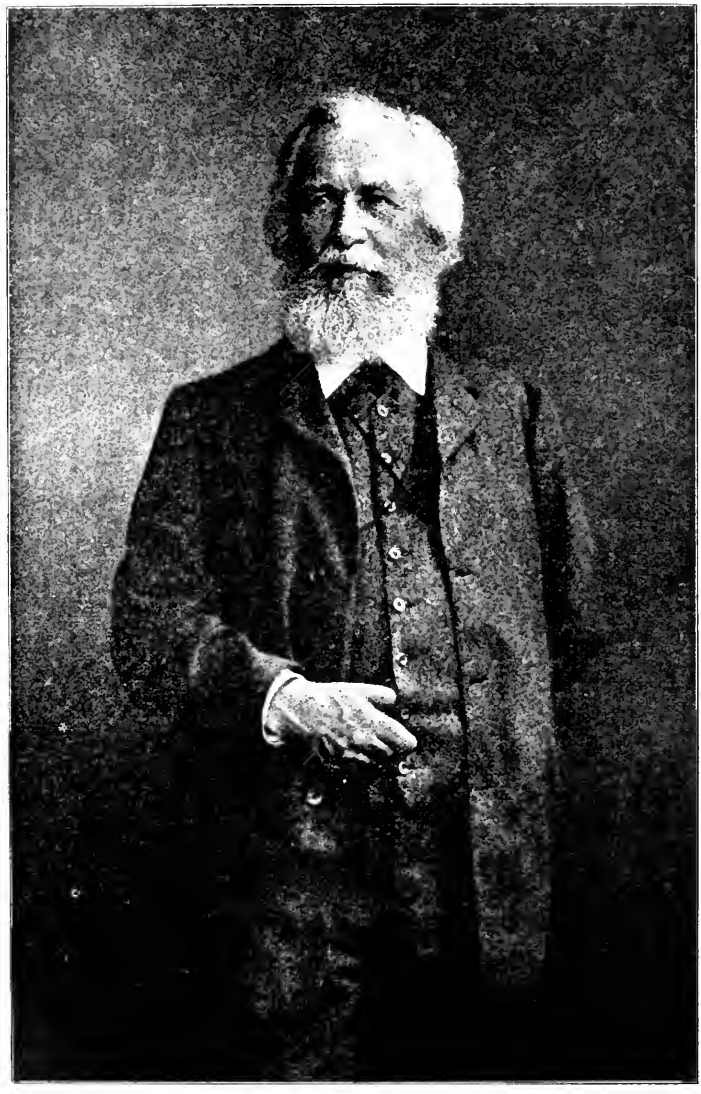
This "anthropistic romance" leads to the poetical fiction of a "personal God" who as creator, preserver and ruler of the world is supposed consciously to direct the entire course of its development according to a definite aim and purpose.

As much as sixty years ago this old misleading vitalism was thoroughly refuted, and since then our modern evolution theory has completely removed the ground from beneath its feet. When, nevertheless, a new form of the same thing, the so-called neo-vitalism, succeeds in again presenting its claims, this anachronism is explained on the one hand by the deficient biological education of its representatives and on the other hand by the deeply rooted primeval instinct of the speculating human mind toward the mysterious and occult. This is particularly true of the mystical conception of consciousness, a partial phenomenon in the psychic life of man and the higher animals, in which even some prominent naturalists perceive an impassable boundary to our knowledge of nature. The advanced comparative and genetic psychology of modern times has led us to the conviction that the most highly developed human consciousness does not owe its origin to any supernatural "spirit," but like all other psychic activities represents the work performed by the neurons, the ganglion-cells in the cortex of our cerebrum.

When now in spite of this fact the philosophy of the dualistic school speaks of a special universal consciousness (*Weltbewusstsein*) this error arises from the unjustified transference of human psychic activities to the realm of the universe as a whole. Our monistic natural philosophy has convinced us that "a spirit in all things dwells," and that the unitary and all-comprehensive "God-nature" does not require human personification. Although this natural monistic view of the world was a clearly formed conception in the minds of the prominent thinkers of antiquity, it has attained a firmer empirical foundation through the magnificent progress made in the knowledge of nature, and especially in the modern theory of evolution, in the last half-century.

At the head of this marvelous progress stands the final solution of the great "problem of man," the clear scientific answer to the world-old questions, Whence? Whither? Why? On the strength of its three great documents, paleontology, comparative anatomy an ontogeny, the theory of descent has convinced us that man is

the most highly developed mammal; that like the vertebrates he has developed in the course of many millions of years from a long line



HAECKEL IN 1905.

of animal ancestors. This has now become a "historical fact." Human ontogeny has taught us that every single human being, like every other vertebrate, takes its origin from a single simple cell.

The wonderful series of forms which this one-celled germ passes through until its full completion as a complex human organism is a brief repetition (dependent on the laws of heredity and adaptation) of the long and wonderful line of ancestors which our animal progenitors have passed through in the course of many millions of years. In other words, "the history of the germ is a short sketch of the history of the race." This "biogenetic principle" is no airy hypothesis but a clear theory firmly established by facts.

The great biologist who was the first fearlessly and with clear consciousness to consummate this important solution of the problem of man referred to it in 1863 with good reason as "the question of all questions." Since now exactly fifty years have passed since this world-moving discovery it is certainly fitting that the great meeting of naturalists in Vienna should at the same time celebrate proudly and gratefully this "jubilee of anthropology." This is more important and of greater consequence than all the brilliant festivals taken together which are being celebrated in this year of many jubilees. For the previous boundaries of natural science have now fallen; its dominion has become extended thereby over the whole realm of man's intellectual life. *Nature is everything,* and therefore all true science is also at bottom "natural science."

"Pure reason" sees at first in this advance in modern natural science only the most important reform of the theoretical world-conception, but sooner or later it must also involve a corresponding practical reform in our conduct of life. The deplorable state in which traditional dualism to-day still holds captive our social and ethical, our political and pedagogical conditions, will give place more and more to liberal progress toward rational freedom. The pure *monistic religion* which will develop therefrom will, thanks to the conquests of our modern natural science, lead the humanity of the twentieth century to a higher grade of perfection.

FIFTY YEARS IN THE SERVICE OF THE EVOLUTION THEORY.[1]

BY DR. W. BREITENBACH.

THIS year Prof. Ernst Haeckel can celebrate a peculiar jubilee. It is fifty years ago last September since his first public appearance, so pregnant with consequences, in behalf of the Darwinian theory. In the autumn of 1859 appeared Darwin's epoch-making work *On the Origin of Species by Means of Natural Selection, or the Preservation of Favored Races in the Struggle for Life,* which was edited the following year in the German language by the zoologist Bronn of Heidelberg. At first the book met but scanty approval from German zoologists and botanists. Here and there literary voices in Darwin's favor made themselves heard, but they aroused no responsive echo, and the general public particularly continued to know nothing of the Darwinian theory and its revolutionary significance. Even the writings of the German zoologist Carl Vogt and the English zoologist Thomas Huxley, which appeared in 1863, did not make any impression in spite of the fact that even then they were discussing the serious problem of the application of the Darwinian theory to mankind. Huxley, especially, in his *Evidence as to Man's Place in Nature,* which is still classical and well worth reading, made the assertion that the anatomical differences between man and the man-like apes are less than those between the latter and the lower apes. With this proposition, which Haeckel later called the "Pithecometra principle," it was expressly declared clear and distinctly that man is most closely related to the anthropomorphic apes and must historically have originated from them. Even Carl Vogt arrived at the conclusion that man has developed from the animal kingdom.

[1] Translated by Lydia G. Robinson from the *Neue Weltanschauung* of September, 1913. The illustrations in this article, though not directly pertinent to its contents, are reproductions of a few instances of Professor Haeckel's own artistic work.

Haeckel himself became acquainted with Darwin's book in Berlin in 1861 after his return from Messina (where he had been making a special study of Radiolaria) and was sure that none of the zoologists and anatomists of Berlin at that time recognized the Darwinian theory. Only the intelligent botanist, Alexander Braun, gave his assent in great measure. But from the moment in which Haeckel finished reading the *Origin of Species* he was an enthusiastic and confident adherent of Darwin, the further extension of whose theory was henceforth to be the most important task of his life.

He utilized the first opportunity which offered itself to declare his agreement with Darwin's theory. This occurred in a note in his *Monographie der Radiolarien* which appeared in 1862. The note reads: "I can not refrain from taking this opportunity to give expression to the great admiration with which Darwin's remarkable theory of the origin of species has filled me. The more, since this epoch-making work has met with a prevailingly unfavorable reception from German specialists, and to some extent seems to have been totally misunderstood. Darwin himself wishes his theory to be put to the test in as many directions as possible, and looks 'with special confidence to young aspiring naturalists, who will be capable of judging both sides of the question impartially. Whoever is inclined to the view that species are inconstant will perform a good service to science by scrupulously acknowledging this conviction; for only in this way can the mountain of prejudices be removed under which this object lies buried.' I fully share this opinion, and feel compelled for this reason to express my conviction with regard to the mutability of species and to the actual genealogical relationship of all organisms. Although I shrink from sharing Darwin's views and hypotheses in all respects, and from regarding as correct the entire demonstration he has attempted, I must still admire in his work the first serious scientific attempt to explain all the phenomena of organic nature from a sublime unitary point of view and to replace incomprehensible miracle by comprehensible natural law. Nevertheless, there may be more error than truth in Darwin's theory in the form in which it appeared as the first attempt of the kind. As incontestably important principles of the greatest significance, at all events, as are natural selection, the struggle for existence, the relation of organisms to one another, the divergence of character and all other principles elucidated by Darwin in support of his theory, still it is easily possible that just as many and as important principles which affect the phenomena of organic nature in the same way or with even greater restriction are still totally unknown to us." After

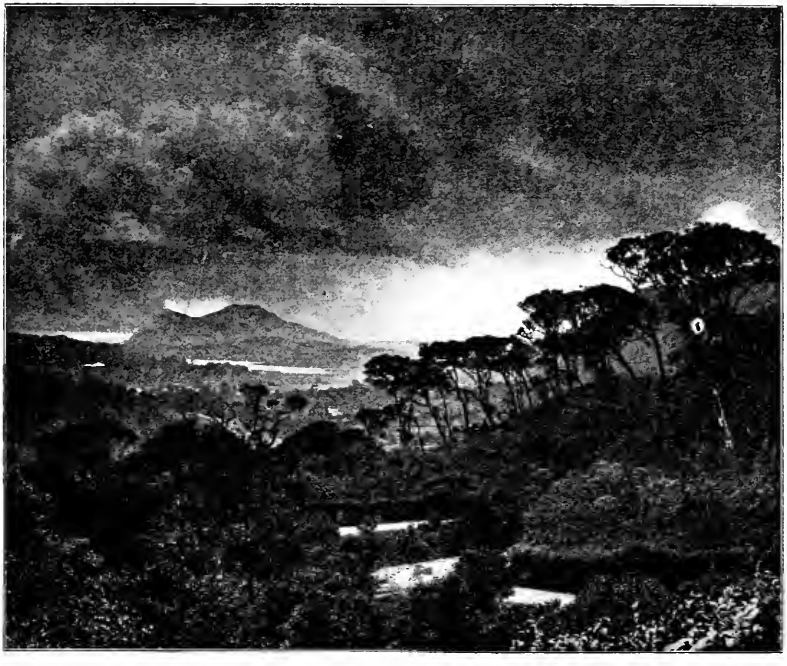
a few more observations the note then concludes: "The greatest defect of the Darwinian theory probably lies in the fact that it does not furnish any point of departure for the origin of the primitive organism from which all others have gradually developed, most probably a simple cell. If Darwin assumes for this first species another special act of creation, it would be very inconsistent to say the least, and, it seems to me, not intended seriously. But apart from these and other shortcomings Darwin's theory possesses as it stands the undying merit of having put sense and meaning into the whole theory of the relations between organisms. When we consider how every great reform, every long step in advance, meets with the more violent opposition the more unfeelingly it overturns well-rooted prejudices and opposes prevailing dogmas, we certainly can not wonder that Darwin's ingenious theory has hitherto met only attacks and repulses instead of well-deserved recognition and investigation."

In the text of the work on Radiolaria also there are single passages which show that Haeckel even then had fully grasped the great significance of the Darwinian theory, and he had previously sought to sketch a genealogical system of the Radiolaria.

This courageous open confession of the youthful zoologist was hidden in a large scientific monograph limited to the narrowest circle of specialists, and made no outward impression. But Haeckel was stirred in his inmost being by the new theory and regarded it as his duty to assist in obtaining for it the recognition it deserved. In 1863, the meeting of the German naturalists and physicians was held in Stettin. On September 19, Haeckel gave the first public address "On Darwin's Evolution Theory." The lecture is a clear intelligible presentation of the new theory of the English naturalist and thus early puts in systematic form the farthest reaching consequences to which Darwin himself at that time could not commit himself, and does so, moreover, from purely external reasons. Haeckel condenses the fundamental idea of the Darwinian theory tersely thus: "All the different animals and plants which are living to-day, as well as all organisms which ever have lived upon the earth, have not been created as we have been accustomed to assume from our earliest youth, each one for itself independently in its species, but have developed gradually in spite of their wide variety and great diversity in the course of many millions of years from some few, perhaps even from one single original form, one supremely simple primitive organism. Accordingly, so far as we human beings are concerned, we, as the most highly organized vertebrates, would have to look for our primitive common ancestors among the apelike mammals; still

farther back among kangaroo-like Marsupialia; still farther, in the so-called secondary period, in lizard-like Reptilia; and finally in a still earlier time, in the primary period, in low organized fishes." At the end of his lecture Haeckel calls the Darwinian evolution theory the "greatest scientific advance of our time, promising to do for organic nature what Newton's law of gravitation has accomplished for inorganic nature."

In the Stettin address Haeckel, the leading German naturalist, had not only brought Darwin's new theory before the forum of the



VIEW FROM RAMBODDE PASS.
After a photograph from *Wanderbilder*.

German scientific world but also before the broader public. With dauntless courage he deduced from it that most important inference of man's descent from the animals, by which Darwin's theory was destined to attain, and has attained, such prodigious significance for the transformation of our entire world-conception. Of course the address of the young Jena professor met with the liveliest opposition on the part of the older naturalists present who ridiculed Darwin's views and theories and declared them to be absolutely untenable, without suspecting what folly they themselves were com-

mitting. But this opposition, which is the lot of everything new and revolutionary, did not last long, and the result of Haeckel's speech was that the idea of a development of the higher from the lower took firm hold in science and in the educated public at large, and that the theory of man's descent from animals never again disappeared from the public view. So this speech at Stettin took its place by the side of the above-mentioned writings of Huxley and Vogt, and from that hour Haeckel took upon himself the leadership in Germany of the struggle for the theory of descent. He has kept it up for almost a generation and was later not unjustly called *the German Darwin.*

Let us see wherein Haeckel's further services in behalf of the new theory mainly consist. A few years after his speech at Stettin he gave two lectures before a small circle in Jena, "On the Origin and Pedigree of the Human Race." In them he developed the general arguments which compel us to classify man in the animal kingdom and to apply to him the same laws of evolution which prevail there. Since from his physical constitution man is undoubtedly to be counted in the animal kingdom, since he is a genuine mammal and must be placed at the top of these most highly developed vertebrates, it necessarily follows, if we grant the truth of the theory of descent in general, that man too must have developed from the lower animals, apes, semi-apes, the Marsupialia, and further back from the Amphibia, fishes and invertebrates. In 1865 Haeckel said literally: "If we can prove the truth of the Darwinian theory, our acceptance of a descent of man from lower vertebrates must necessarily follow, and we are altogether exempt from any special demonstration for the latter hypothesis." Even then Haeckel placed the greatest value upon this philosophical basis for the animal genealogy of the human race, and he worked it out still further a year later in his great work *Generelle Morphologie.* The following passage from this classical work deserves to be retained for all time: "The theory of descent is a general law of induction which follows with absolute necessity from the comparative synthesis of all organic natural phenomena and particularly from the threefold parallels of phyletic, biontic and systematic evolution. The statement that man has developed from the lower vertebrates, and indeed most clearly from actual apes, is a particular deductive conclusion which follows with absolute necessity from the general law of induction of the theory of descent." "All further discoveries which in the future will enrich our knowledge about the phyletic development of man," adds Haeckel, "can be nothing but special verifications of that deduction which rests upon the broadest inductive basis." All the

later work in all the domains of anthropological morphology, comparative anatomy and ontogeny, physiology and even physiological

THE SACRED BODHI TREE, CEYLON.
From a crayon drawing in *Wanderbilder.*

chemistry, has confirmed again and again this bold deduction of Haeckel in the year 1866.

In the above-mentioned *Generelle Morphologie* may also be

found the comprehensive foundation for that great law which must be regarded as Haeckel's most important contribution to the extension of the evolution theory and whose further development and application from that time on governed his Darwinistic labors. I mean his "biogenetic principle" which is hotly contested to this day. According to this principle of organic evolution, ontogeny, or the germ-history of the individual, is a brief repetition of the history of the race depending on the law of heredity. The separate stages of ontogenetic evolution give us at least an approximate picture of the development through which have passed the ancestors of the animal in question in the course of the geological evolution of the earth. In other words: In its development from the fertilized ovum every animal passes through a series of forms through which in a similar sequence his ancestors have passed in the course of the earth's history. The history of the germ is a sketch, a miniature, of the history of the race.

The first intelligent presentation of this law was furnished in 1863 by Fritz Müller in his brief paper "For Darwin," a paper whose great value Haeckel has laid stress upon throughout his whole life with the warmest words of approval. I gave an extensive report of the first proof of the biogenetic principle by Fritz Müller in my *Populäre Vorträge aus dem Gebiete der Entwicklungstheorie.*

By means of this law the significance of ontogeny, or the individual development of animals from the fertilized ovum, stood out more prominently than heretofore, and it was only natural that Haeckel should concern himself exhaustively with this branch of zoology. He investigated particularly the first development of the lower animals from the ovum, and by this means (at the same time utilizing similar investigations on the part of other zoologists, especially of the Russian Kovalevski) arrived at the ingenious conception of his famous "gastræa theory" which he worked out and established in various writings during the years 1872 to 1884, and which must be counted among his most conspicuous accomplishments in zoology.

Comparative germ-history or ontogeny has established by exact observations that from the fertilized ovum of all metazoans or many-celled animals after the general divisions of the ovum or segmentations, an early or germ-form proceeds which shows essentially the same construction in all classes of animals.

This germ-form in all typical cases is a small bubble- or cup-shaped formation whose wall consists of two layers of cells containing an opening at one end through which the inner cavity of the

sac is connected with the outside world. The two cell layers are the cotyledons, the inner or entoderm and the outer or ectoderm; these enclose the primitive digestive cavity (archenteron) and the opening in the partition is the primitive mouth (blastopore). The entire structure is called the gastrula. Such a typical gastrula appears in representatives of all metazoans. Often the form of the gastrula is secondarily modified as a consequence of various conditions, but the two cotelydons, the archenteron and the blastopore, can always be distinguished. From this simple gastrula all the later organs of the animal body are derived in a further evolution, as can be separately demonstrated.

To these ontogenetic facts Haeckel now applied the biogenetic principle, arriving at the following supremely important conclusion: The embryonic form of the gastrula is the repetition (dependent on heredity) of a primitive ancestral form of real animals, the so-called gastræa. In other words, all metazoans are descended from an original animal form, long since extinct, which was constructed essentially similar to a typical cup-shaped gastrula, the gastræa. This phylogenetic utilization of ontogenetic material is Haeckel's work. When some naturalists nowadays wish to dispute this service of Haeckel's they seem to understand but poorly the historical evolution of science.

In the biogenetic principle and the gastræa theory Haeckel has given to science clues which lead safely through the labyrinth of ontogenetic facts and solve the riddles of the history of the animal kingdom and hence also of our own race.

Haeckel attempted to apply this new knowledge to man in a comprehensive manner in his *Anthropogenie* which appeared in its first edition in 1874, after he had already worked out the fundamental features of animal and human descent in different editions of his popular *Natürliche Schöpfungsgeschichte*. The *Anthropogenie*, human ontogeny and phylogeny, was almost entirely disregarded by the narrower specialists, was even attacked from several quarters with extreme violence. Gradually, however, the attacks ceased, one edition followed another, and to-day the fundamental features of the *Anthropogenie* have been accepted by practically all well-informed and competent zoologists and anthropologists. The "question of questions," as Thomas Huxley called that of the descent of man, has been discussed for a number of years with extreme animation, not only among the laity but also in strictly scientific circles, and some of our best anatomists and anthropologists are devoting their entire energy to it.

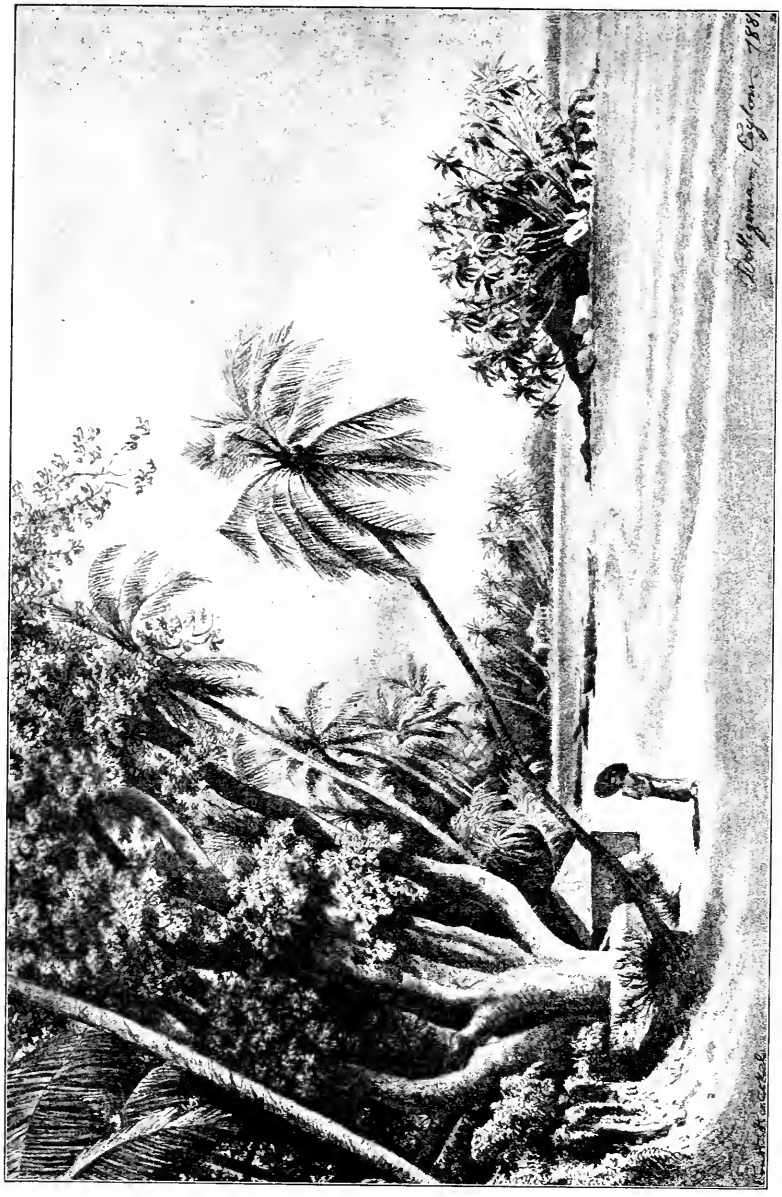
To be sure these investigators are concerned almost exclusively with the narrow specific question of the immediate antecedents of man, hence his relations to the nearest mammals, the apes. Haeckel on the contrary has from the beginning treated the problem of man in its widest scope and attempted to follow back the ancestral line of our race to the beginnings of the animal kingdom. In all the rapidly succeeding editions of the *Anthropogenie* and the *Natürliche Schöpfungsgeschichte,* he has constantly endeavored to improve his phyletic theories and hypotheses and to bring them into harmony with the state of research in each case. When he gave a condensed exposition "On Our Present Knowledge of the Origin of Man" at the International Congress of Zoologists at Cambridge in 1898, he met with entire accord from this forum of international science. For the last time he discussed and substantiated in detail his views on human phylogeny in his pamphlet *Unsere Ahnenreihe* (1908).[2]

In human phylogeny Haeckel distinguishes two great halves which he again divides into three grand divisions. The first and oldest half includes the time before the Silurian and is distinguished by the fact that there are extant no fossil records of our ancestors from that time. In this first main section of the line of ancestors there can have been only invertebrates whose soft bodies could not leave any fossilized relics. Here paleontology can give us no information about the race, and we are directed to comparative anatomy and very especially to comparative ontogeny. The safe guides to these domains are the biogenetic principle and the gastræa theory. It is to-day recognized by all competent investigators that the earliest ancestors of the vertebrates, to which man belongs, must also have been invertebrates; there is also general unanimity with regard to the fact that the earliest ancestors of all metazoans are to be sought in the one-celled protists. But where the connection of the vertebrates with the invertebrates is to be found, scholars can not yet agree, as I have pointed out in Volume VIII of the *Neue Weltanschauung* with regard to a very fantastic theory of an American zoologist. Any special hypothesis about the exact point of contact is just as uncertain as the general phyletic hypothesis of the descent of vertebrates from invertebrates is certain.

We have firmer ground beneath our feet in considering the second half of our ancestral line, which reaches from the Silurian up to the present time and of which we can gain information from many fossilized remains of the fauna of those times. Comparative

[2] Since I have given an extensive analysis of this work in the *Neue Weltanschauung* of 1908, pages 442-453, I will here simply refer to this essay.

anatomy and ontogeny bear conclusive witness to the unity of the system of vertebrates, and the increasing number of vertebrate



COCOA ISLAND AND THE REST HOUSE AT BELLIGEMMA.
From a crayon drawing in *Wanderbilder*.

fossils leaves no room for doubt that the higher vertebrates have developed from the lower. In the history of the evolution of the

earth there appear in succession fishes, frog-like fishes, Amphibia, lizards, the earliest mammals, later and higher mammals, and among these latter there again appear first the lower and then the higher forms and at last the real apes and man. Haeckel regards the following as the last stages in man's ancestral line: (1) The earlier cynopithecus (baboon and long-tailed monkey); (2) Later cynopithecus (senile and proboscis monkeys); (3) Early man-apes (gibbons); (4) Later man-apes (orang outang and chimpanzee); (5) Ape-men (*Pithecanthropus*); (6) Primitive man (*Homo Primigenius*, Neanderthal); (7) *Homo sapiens.*

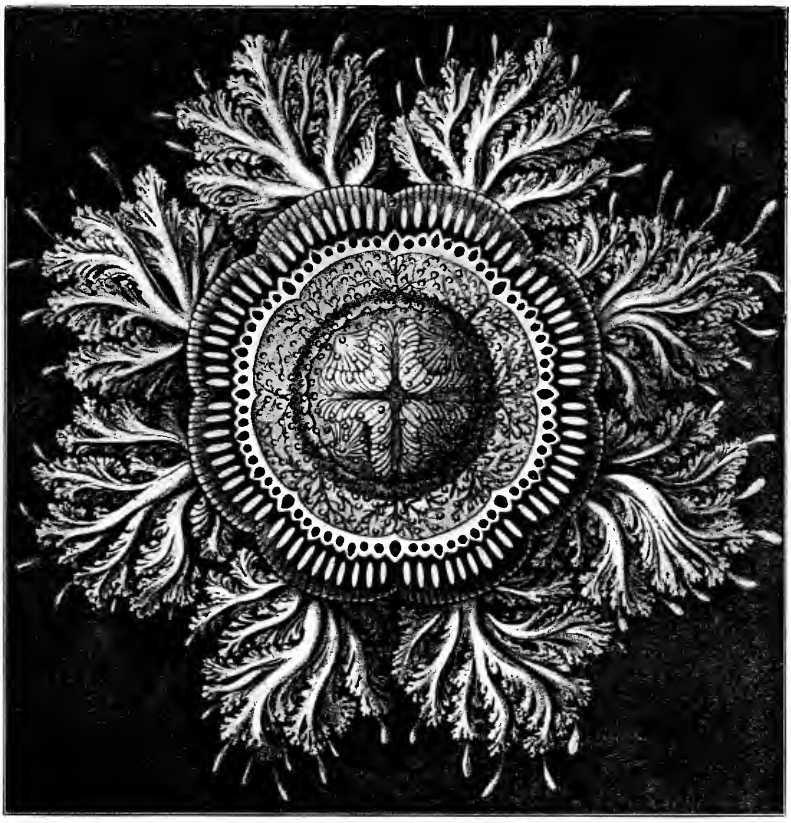
However one may regard singly the various phyletic hypotheses which Haeckel has advanced for the elucidation of the human genealogical tree in the course of fifty years, one thing must be granted even by his enemies: He has known how to open up the whole question in Germany, he has interested the great educated public in it, and last but not least he has compelled specialized science to take her proper place. At the end of his life he has the satisfaction of seeing that the ape-theory, formerly in such ill repute, has now become an integral component part of specific anthropology. The churches, that formerly were the keenest opponents of the theory of descent, have become familiar with the idea of the blood relationship of man with the animal kingdom, and even Jesuit authors give us to understand that the theory of the physical descent of man from the higher mammals does not stand in any insurmountable contradiction to the doctrines of the church.

In his fundamental work of 1859 Darwin had deliberately left man entirely out of account. Only in one passage at the end we find this significant sentence: "Light will be thrown upon man and upon his history." It is characteristic of the state of science in Germany at that time that Bronn, the first translator of Darwin's book, suppressed this passage. But I have pointed out in a pamphlet entitled *Die Abstammung und Vorgeschichte des Menschen* (Brackwede, 1907) that Darwin in reality had concerned himself with the application of the theory to mankind long before Huxley, Vogt and Haeckel. Later, in *The Descent of Man and Selection in Relation to Sex* which appeared in 1871, Darwin decidedly espoused the theory of the animal descent of man and placed himself entirely on Haeckel's side, from which position he never departed as long as he lived.

Nevertheless it remains to Haeckel's undying credit that he continued to build up Darwin's structure. It is he who applied the

theory of descent most consistently to man and courageously taught that man was descended from apelike ancestors.

As in his work on *The Origin of Species* Darwin neglected to extend his theory upwards, he also let an important omission creep in at the bottom, to which Haeckel had already called attention in his Stettin address. Darwin did not explain the first appearance



RHIZOSTOME (*Toreuma belligemma*).
From *Wanderbilder*.

of organisms on earth, or, as they said in those days, the origin of the primitive organism. To this point Haeckel had already called attention in Stettin in the following words: "Another and probably the most important defect in the Darwinian theory lies in the fact that it furnishes us with no starting point for the beginning or spontaneous generation of one or a few most primitive tribal organisms from which all others develop. Was it a simple cell like those which

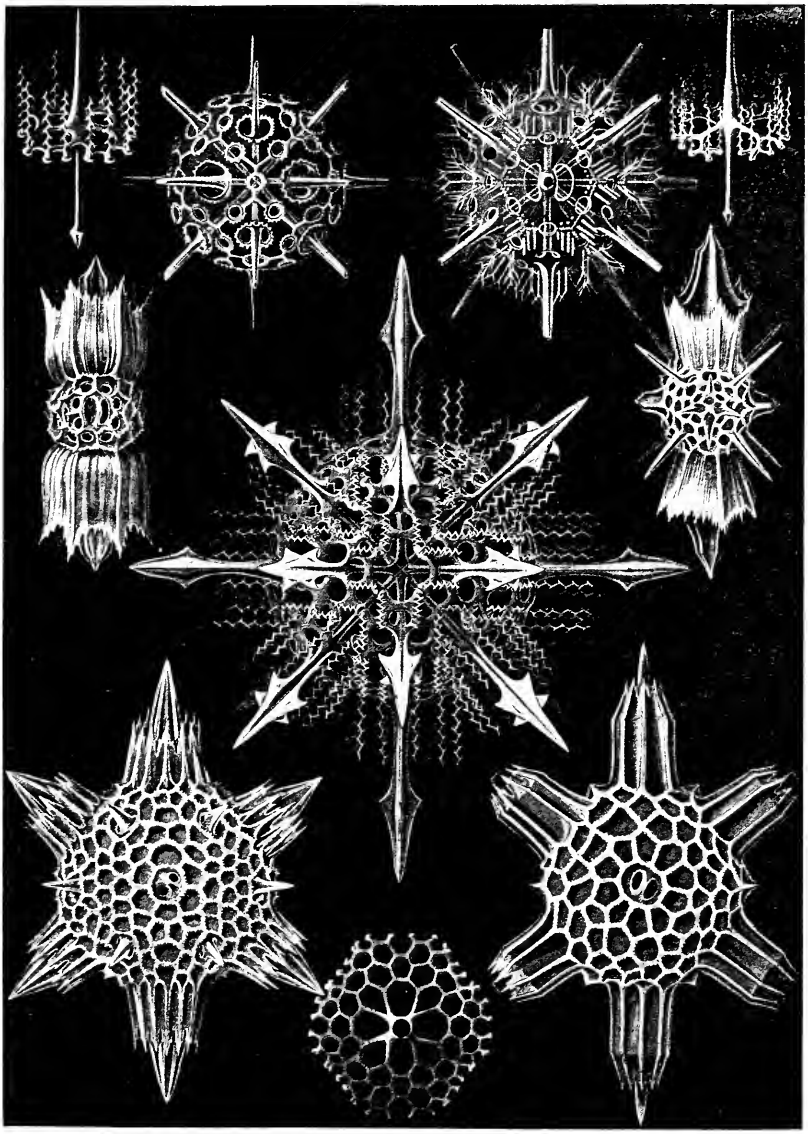
even now exist in great quantities as independent beings in the doubtful boundary between the animal and plant kingdoms, or such as one of the ovums of all organisms are represented to be at some time or other? Or was it in a still earlier time merely a simple animated globule of protoplasm, capable of nourishment, reproduction and growth, a moner similar to certain ameba-like organisms, which seem not yet to have reached the degree of organization of a cell?"

Haeckel with great keenness of perception has sought to fill up these lower gaps in the Darwinian theory by his hypothesis of spontaneous generation.[3] There are of course a number of such hypotheses but the one which Haeckel has gradually built up in the course of time seems to correspond most closely to biological and paleontological facts. That spontaneous generation has distinguished representatives among specialists to-day is recognized from the fact that Professor Schäfer of the department of physiology at Edinburg, at the last meeting of the British Association gave a lecture on the subject which has received a great deal of comment and in which spontaneous generation was characterized as a necessary hypothesis. Spontaneous generation, i. e., the actual origin of primitive vital substance (similar to the protoplasm of to-day but by no means necessary as it is) from inorganic elementary substance and combinations, is a logical demand of the evolution theory, for it is the first hypothesis to produce a direct connection between the lifeless and the living world as implied in the concept of evolution.

The anthropogenetic works of Haeckel have still another important significance for our entire world-conception. Ontogenetically we can distinguish quite exactly the moment when a new human individual begins its existence. It is the moment in which the nucleus of the masculine sperm-cell coalesces with the feminine ovum-cell in fertilization. In this process the first tribal cell of the new individual has grown from the fertilized ovum-cell, and from this the whole body gradually develops ontogenetically. This one fact overthrows the old dualistic soul-theory of theology. If the soul were really a special immaterial being independent of the body, which abandoned it after death in order to continue in the "Beyond" a life of its own, then the great question arises, Whence comes the soul of the new human embryo into the mother's body? The church of course assumes that it enters the embryo at a definite moment.

[3] I have reviewed extensively the most important theories of spontaneous generation in my *Populäre Vorträge aus dem Gebiete der Entwicklungslehre* (Brackwede) and here refer to it for a more detailed consideration of the subject.

Monistic anthropogeny must reject such a fantastic view. According to this science the soul of the grown man is the aggregate of the functions of the neurons or psychic cells of the brain and develops



ACANTHOPHRACTAE.
From *Kunstformen der Natur.*

as gradually from the combined cell-souls of the blending sexual cells as the grown body develops from them. With the death of the soul-cells the soul also disappears, just as certain phases of it are

SNAIL SHELLS (*Posobranchia*).
From *Kunstformen der Natur.*

destroyed simultaneously with the loss of a part of the psychic organ. With this fact confirmed by every experience of physiology, falls the ancient dogma of the immortality of the individual soul and with it one of the main props of the dualistic doctrines of the church. It is exactly this knowledge that makes the churches such bitter enemies of the theory of descent in general and of anthropogeny in particular.

At the end of the nineteenth century Haeckel combined all the far-reaching and partly revolutionary ideas which were put forward in the *Generelle Morphologie, Natürliche Schöpfungsgeschichte* and *Anthropogenie*, in his famous *Welträtsel* and *Lebenswunder*, and elaborated them into a well-rounded and consistent monistic world-conception. This book on the "Riddles of the Universe" has called forth a veritable flood of writings, *pro* and *con*, such as has been the case with but few books in all the literature of the world. The controversy still rages with regard to the *Welträtsel*, which has been translated into about fourteen languages and has a circulation counting in the millions. Very recently a Hindu professor visited Haeckel and asked permission to be allowed to translate the book into the Hindu language. He felt able to prophesy definitely that copies of this translation would be sold in India in hundreds of thousands. Whatever may be a person's attitude toward the single points discussed in the *Welträtsel*, it remains, in spite of all opposition, the book which has pointed out the way to millions of people in their search for a new spiritual content in their life after they have ceased to find consolation in the old doctrines of revealed religion and dualistic philosophy. Even to the lowest strata of society in all civilized lands the *Welträtsel* has carried all the great ideas of the evolution theory and of monism, and no power will be able to eradicate them again from the world. In the course of time the consequences of this deed will be boundless. Not only must the philosophy of the schools, which still lies almost completely under the spell of Christian theology, come to an understanding with the monistic conception if it does not wish to sink back very soon to the rank of medieval scholasticism, but it will also recognize the important facts of anthropology (the vertebrate nature of man and his animal descent) and will even be obliged to utilize them in the construction of a new world-conception. But the direct consequence of the monistic philosophy of the future (whose beginnings we can see even now) will then be the upbuilding of a new conduct of life in all directions, gratifying beginnings of which are likewise to be observed.

Eight years ago the new world-conception of monism which Haeckel has supported since his youth formed with his cooperation an external organization which, however, has unfortunately not become what its founder had hoped. This is not the place to enter into details. We shall only mention the bare facts because the founding of the Monistic League signifies a certain rounding off of Haeckel's life-work in the service of Darwin and the evolution theory.[4]

Having now attained a general survey over the most significant work of Haeckel with regard to Darwin's new theory, the next thing is to consider briefly also his specialized work in purely zoological lines. However, these specifically zoological works of Haeckel which contain so many new Darwinistic ideas are so little known to the public at large, and also usually so little accessible, that I prefer to abandon any attempt here at a suitable appreciation, and the more since I have attempted to do the matter justice in my biography of Haeckel.[5]

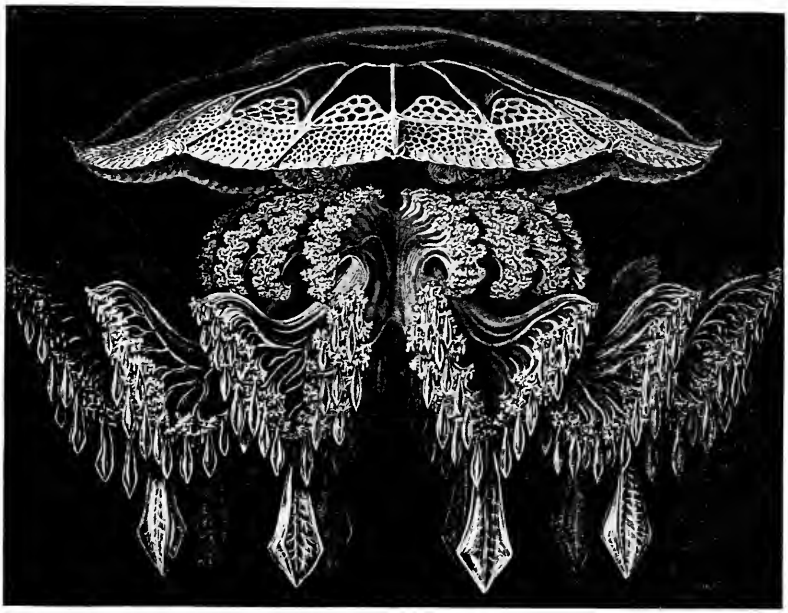
I shall only recall briefly a few fundamental works. From the Darwinian theory there immediately arose a new conception of the systems of animals and plants. If the higher forms of life really are descended from the lower then all of them must be related to one another, and the system became a genealogy of animals and plants. Haeckel was the first naturalist to systematize the animal and plant worlds from this new point of view, and as early as in his *Generelle Morphologie* he sketched the first genealogical trees. They were persecuted for a long time and attempts were made to render them ridiculous. In the course of years, however, they have gained general currency in science, and to-day one meets them in almost all the better morphological and systematic works. Haeckel himself improved the first phylogenetic attempts from year to year, and in the years 1894 to 1896 published his three-volumed *Systematische Phylogenie* as a "sketch of the natural system of organisms on the phylogenetic basis," which contains the pedigrees of all the larger divisions of the animal and plant kingdoms.

The gastræa theory made possible for the first time a real phylogenetic classification of the animal kingdom. From this theory there first followed the very important division of the animal kingdom into protozoans and metazoans, the one-celled lower and the many-celled higher animals. Then followed the so-called homology of

[4] More details are contained in my recent pamphlet *Die Gründung und erste Entwicklung des Deutschen Monistenbundes* (Brackwede, 1 Mark).

[5] W. Breitenbach, *Ernst Haeckel; ein Bild seines Lebens und seiner Arbeit*, 2d. ed., Brackwede.

cotyledons which gave further basis for a natural division of the metazoans. The fundamental features of the gastræa theory are to-day recognized very generally as correct, and by most zoologists are made the basis of a classification of the animal kingdom. This theory has also given the impulse to many other investigations, and especially has made possible an actually scientific comparative germ-history, or ontogeny. The often remarkable facts of ontogenesis or germ-history, Haeckel sought to make intelligible by the biogenetic principle. To him ontogenesis was causally conditioned by phylogenesis or race-history. How greatly these Haeckelian ideas



CHANDELIER MEDUSA (*Rhopilema Freda*).
From *Wanderbilder.*

have influenced zoology is shown by a glance at the literature of that time and later.

If in the face of these great services (of which many more could be enumerated) many of the younger zoologists to-day believe that they might throw Haeckel aside as old iron, the explanation of this attitude in many cases is not difficult. Some of these gentlemen are concerned with the most delicate researches in the structure and division of cells, others perform experiments in the artificial generation of monstrosities and the like—in short a great part of zoology has again become the tiniest (and often very fruitless) detail work,

and the present generation of zoologists seems gradually to have lost sight of the great whole. For there are people who concern themselves all their life long almost exclusively with the nuclei of cells, regarding these tiny particles as more important than the powerful synthetic works which Haeckel has accomplished in the biogenetic principle or in the gastræa theory, or than the great and permanently fundamental monographs on Radiolaria, Medusae, and Siphonophora. It may also appear precarious to many younger men who would fain make a speedy career for themselves, to attach themselves to the atheist and monist Haeckel, even though they can not avoid utilizing in their work many ideas and terms which Haeckel was the first to introduce into science. For experts in these matters this fact only increases the greatness of Haeckel, which in spite of all persecutions, calumnies and insults still endures. They matter less for the man, whose services for zoology can not be entirely denied, than for the great work which now for fifty years he has supported and built up so courageously and so successfully, which was called into being by Charles Darwin, the great master of us all, and which becomes more and more the solid foundation of our monistic naturalistic world-conception. May it be vouchsafed Ernst Haeckel, who is soon to celebrate his eightieth birthday and who for fifty years has fought "for Darwin," to pursue for many more years from the exalted height of his purified world-conception the further development of the teachings of Darwin and of himself.

RELIGION IN A MONISTIC INTERPRETATION.

BY THE EDITOR.

MANKIND has passed through a period of dualism, but the spirit of scientific investigation has more and more firmly established a unitary world-conception commonly called monism, and at present in monistic circles the tendency prevails to combat dualistic notions and the practical applications drawn therefrom. Many ardent monists go too far in this direction; they see a dualism where the nomenclature still suggests it, and so their efforts are sometimes like Don Quixote's fight with the windmills. The victory of the unitary world-conception is practically complete, and the time has come to understand the paramount significance of the subtler, higher and so-called spiritual relations of nature, to appreciate the superiority and dignity of thought, of man's intellectual, moral and religious aspirations.

It goes without saying that all phenomena of life belong to the all-comprehensive domain of nature. The spirit of man is not a foreign importation from extramundane spheres, but develops right from the roots of all existence,[1] and is as much subject to natural law as are physical phenomena, yet nobody who has given any thought to the matter will deny that the spiritual life of man is far more important than purely physical happenings. If it is but understood that the whole realm of existence constitutes a unity we need not be afraid to emphasize both the paramount significance and the unquestionable superiority of the intellectual in life. In fact a true monism would not be complete without understanding and rightly appreciating the higher phases of life and their proper place in the system of the universe. Spiritual life is by no means an accidental

[1] For a brief explanation of these and kindred problems see the author's *Philosophy of Form* which has appeared in German under the title *Die Philosophie der Wissenschaft,* in French under the title *Philosophie comme science,* and of which an Italian translation is now on the press (Formaggini, Genoa, Italy).

by-play. It reveals to us the meaning of the cosmos, and to grasp this meaning is the task of religion, philosophy and science.

It is a poor principle of fanatic radicals to condemn religion as a mere invention of priestcraft. Religion is the precursor of philosophy and finally also of science. It is true that the religious development of mankind passes from the crudest notions of animism and kindred superstitions to higher, purer and more scientific views. But so does philosophy, so does science. Religion in its inmost being is nothing but a popular philosophy applied to practical life. The nucleus of every religion is a world-conception so simply outlined that even unthinking masses can comprehend its significance and follow the rules of conduct derived therefrom. Religion has passed through many phases and the end of its development is not yet. We must not forget that religion is the result of a search for truth, and that the actual forms of religion which we meet in different countries and in different ages are the temporary precipitates of this function of the human mind. It is noticeable that in contrast to philosophies they presuppose social interaction, and their products always represent views of whole communities where the opinions of leading personalities are mere factors, not final results.

A comprehension and a study of the development of religion is an essential feature of a scientific world-conception, and therefore it will not do to reject religion offhand as a conglomeration of superstitions. The importance of this view becomes the more apparent since religious life is developing even now, and modern science is molding and reforming the traditional beliefs as they are embodied in the churches of to-day. There is no need to fight the superstitions of the dogmatic formulation of the dead creeds of present-day religion, for the dogmas and a belief in their letter are nowadays no longer of great consequence. It is much better to study the origin of the great religions, to learn to understand the laws of religious development under the guidance of the facts of comparative religion, and to appreciate the meaning of dogmas by digging out what might be called the philosophy of religion. In following this plan we find that many religions which are often mutually contradictory in their dogmas express the same fundamental ideas if we but understand the spirit that has begotten them.

For instance the similarities between Christianity and Buddhism are obvious even to a most superficial consideration, but if we comprehend the original interpretation of the leading ideas, the several religions shall in the end be found to forestall views of a tenable scientific world-conception. Thus the God-idea embodies

the theory of authority. It means this world is not a chaotic medley but a law-ordained whole. The course of evolution shows a definite aim. It is not planned by a designer after the fashion of human conceits but is due to an intrinsic necessity, and we may be sure that the same norms of morality, the same advance from lower to higher stages and the rise to a higher and higher plane will obtain in all planets on which life develops and where rational beings appear and are living communal lives.

Remember this, that all religions teach in one form or another the cultivation of the ideal. There is hero-worship which helps to incite the growing generation to strain all their efforts in the cause of the good. This aspiration has found expression in the belief in a god-man, in avatars, in the incarnation of divinities whether personal or impersonal, in realizing a superior type of manhood, and so forth. So it is noticeable that the Christ-ideal in the church has been a living factor which molded the Christian world and inspired its representative leaders. This Christ-ideal is by no means stable. We may trace the errors of the successive world-conceptions in its changes from century to century, and whether or not the traditional Christianity will be able to maintain itself depends exclusively upon the adaptability of church life to the new demands. What does the idea of a god-man mean but the truth that human reason, human aspirations, human morality are but an enthusiasm to lead a life of the whole, which means to have the world-order incorporated in our own very being? And truly, what is reason, the gist of the human in man, other than the world-order incarnated in a living sentient being? If this world-order is the divinity of the universe, what is man, every man, but a child of God, and the ideal man but the actualization of perfection? The man in whom the norm of right conduct has become realized is the god-man, or as Christians say, the Christ; as the Buddhists say, the Buddha; as the Taoists say, the superior man; as the Persians say, the Mithras; etc.

When the religious superstitions are pointed out to us we should remind the enemies of religion that many superstitions had to be overcome also in other phases of the intellectual life of mankind. The eradication of superstitions in the domain of science is by no means as yet complete. We must have patience with science and its errors, why should we not have patience with religion and its shortcomings? Here is one of the greatest tasks of mankind, and here the religious leaders will find a large field. "The harvest truly is plenteous, but the laborers are few," and the work ought to be done, not in contempt of religious traditions but in sympathy

with them. The very principle of evolution teaches us that we must build upon the past to develop higher forms of life, of institutions, of ideals. Instead of being satisfied with a mere tearing down, we ought to build up, and if with our own aspirations we expect to find recognition we must not denounce our fathers—or, generally, our remoter ancestors—as villains, hypocrites and frauds. Religion originated in response to an inborn want, the desire to know the truth and to live the truth—in a word, to do our duty. No doubt our fathers have erred, but they were inspired by an anxiety to do right; let us criticise them with reverence. Let us honestly and energetically take up our duties of building higher and higher.

WILHELM OSTWALD, PRESIDENT OF THE GERMAN MONISTIC LEAGUE.[1]

BY ERNST HAECKEL.

(With portrait of Professor Ostwald.)

AMONG the most gratifying phenomena in the stirring intellectual life of the present day belongs the constantly increasing significance and extension of our naturalistic monism, that is to say, of that unitary and natural world-conception and conduct of life which is based solely upon knowledge of pure science. The greatest credit for its promotion and extension is at present due to Wilhelm Ostwald, the eminent naturalist who celebrated his sixtieth birthday on September 3 of last year (1913). In here devoting to him a few personal words of sincere thanks I feel myself impelled not only as honorary president of the German Monistic League but also as a friend of twenty years' standing who have seen my own efforts for the advancement of monism, which I have pursued untiringly for half a century, continued and perfected by Ostwald's indefatigable labor in a manner most worthy of sincere recognition.

Since the close of 1910 when Wilhelm Ostwald undertook the presidency of the German Monistic League in response to my earnest request, and especially since he created the *Monistische Jahrhundert,* as an organ (now a weekly) for our league, the interest in and comprehension of our monistic movement has penetrated to the remotest educated circles. The vigorous impulses which the movement has received from him are so various and have been so generally diffused through his "Monistic Sunday Sermons," that I may limit myself here to pointing out only the most important of his great services.

First in importance in my opinion is the consistent aim to have science regarded solely and alone as the source of any rational world-

[1] Translated from the German by Lydia G. Robinson.

conception at the exclusion of all so-called revelation, of all ideas and dogmas which attempt to explain the world of phenomena in a supernatural way. Hence all transcendentalism, all belief in the miraculous, is excluded—without detracting from the great value which these products of creative imagination can possess for our emotional life as forms of poetry, and in a wider sense of art. They must not cloud the clear light of knowledge which pure reason, on the basis of experience and experiment, disseminates over the profuse variety of phenomena.

This is particularly true in the entire realm of intellectual life for those highest and most surprising natural phenomena which the earlier dualistic world-conception—now happily vanquished—was accustomed to look upon as the product of a "higher supernatural power." In fact, however, nature as a unified coherent "cosmos" comprises the entire realm of our human knowledge, and consequently all so-called "mental science" is in the last analysis "natural science."

Now it is the task of philosophy to collect, and by a critical synthesis to unite into one composite whole, all the most important universal results which all the special sciences by conscientious research and analysis have achieved in their special realms of observation. Accordingly, if all true science having for its aim the knowledge of reality is in truth natural science, then it follows that all its most universal results fall under the concept of "nature-philosophy"; for not the so-called philosophy of the official schools is the genuine wisdom of the world (*Weltweisheit*), but our modern monistic natural philosophy which is founded upon the positive experiences of observed facts.

As early as towards the end of the eighteenth and in the beginning of the nineteenth century the great progress of the empirical study of nature had impelled great minds to found a new nature-philosophy, and our great German genius Goethe has in this sense laid the foundation of a "morphology" in the most recondite and most difficult realm, that of comparative anatomy. But the rash and all too hasty generalizations of a "philosophy of identity" and the imaginative products of its untenable metaphysics has thereafter brought "nature-philosophy" into such ill repute that in the first half of the nineteenth century the majority of naturalists cared nothing at all for philosophy but considered their task to lie solely in exact observation and faithful description of individual facts.

When Charles Darwin had solved the great problem of the natural origin of organic forms in 1859 and revived the forgotten

theory of descent, established fifty years earlier by Jean Lamarck, I myself made the attempt in 1866 in my *Generelle Morphologie* to construct this comprehensive theory of evolution as the basis of a true "monistic nature-philosophy." In the meantime the mechanistic character of this monism, which was decried as materialistic, continued to arouse suspicion in wide circles and did not receive the appreciation it deserved until after Wilhelm Ostwald in 1898 had effectively emphasized its "energetic" side.

Ostwald opened up a wider realm for these investigations in 1902 by starting his *Annalen der Naturphilosophie*, after he had already established in 1887 a new valuable organ for the advancement of universal chemistry, his particular department of research, by issuing his *Zeitschrift für physikalische Chemie*. But the great text-book of this special science, followed later by a brief sketch of universal chemistry (*Grundriss der allgemeinen Chemie*), forms only a part of the extraordinarily many-sided and productive activity which this indefatigable investigator and thinker has displayed in the most varied branches of human intellectual life and which has raised him to the rank of a leading philosopher of nature in the best sense.

Ostwald deserves particular credit for spreading our monistic convictions most extensively by issuing since 1911 his popular "Monistic Sunday Sermons." They are intended for the edification of all those "who among the pretensions and confusions of to-day have preserved an inner need for clearness in the great and universal questions of human life." Many of these thoughtful and stimulating sermons perform this high educational task in a remarkable degree; others again call forth opposition rather than applause, but this is equally true of all similar publications which appear at short intervals (weekly or semi-monthly) and which throw light upon the most diverse universal questions from new points of view.

In Germany such creditable efforts in behalf of civilization often meet with distrust and ill-will chiefly because of the narrow-minded bureaucratic spirit of regulation which still places upon the instruction of our schools the fetters of medieval scholasticism. During these last fifty years I myself have had many experiences of this kind while trying to make the most important results of our modern nature-philosophy accessible to wider circles through popular essays. But the harsh criticism which I thereby drew upon me from narrow-minded specialists is far outweighed by the grateful recognition of many intelligent laymen who were thirsting for knowledge.

In 1853, the year in which Ostwald was born, began that sig-

nificant controversy over materialism in which Jacob Moleschott, Karl Vogt and Ludwig Büchner succeeded in justifying the claims of natural science as against the dogmas of the dominant philosophy of the schools. At that time I was studying anatomy, physiology and the history of evolution in Würzburg. Through the excellent lectures of my teacher Rudolf Virchow, who at that time was entirely permeated by monistic convictions, I was even then, at the age of twenty, filled with those views which later constituted the firm foundation of my monistic nature-philosophy.

In 1853 I first became acquainted with the remarkably stimulating writings of Jacob Moleschott, the eminent physiologist and naturalist in whom I soon gained a lovable and faithful friend. When a *Privatdozent* in Heidelberg in 1853 he had founded a physiological laboratory, and in opposition to the dominant dogmatic conception of vital force endeavored to refer all vital phenomena of man, like those of other animals, to physical and chemical processes. On account of his views, branded as "the lifeless materialistic conception of all vital activity," he was compelled by the pious Baden government to give up his academical activity and so removed in 1856 to Zürich as professor of physiology, and in 1878 to Rome. His writings at this time belonged to the most important works which blazed the path of a strictly physico-chemical explanation of vital processes. This monistic physiology was spread among the widest educational circles, especially by Ludwig Büchner in *Kraft und Stoff* (1855). The unitary world-conception connected with this physiology also was insisted upon at that time by the physiological chemist Moleschott, just as it was forty years later by the physical chemist Ostwald. Both chemists contended with equal energy against vitalism, the dogma of a supernatural organic power.

The remarkable progress of biology and especially of the theory of evolution in the last three decades of the nineteenth century seemed to have finally disposed of the ancient vitalism. Nevertheless it has again received new life in the beginning of the twentieth century and as neo-vitalism plays a significant part not only in the dualistic philosophy of the present, especially in psychology, but also in certain circles of a confused spiritualistic physiology. This surprising step backwards may be accounted for on the one hand by the primeval inclination of human imagination towards mysticism and miracles, and on the other hand by the short-sighted repugnance of many careful naturalists to any universal philosophical consideration of nature.

Finally we must emphasize as a particular merit of Ostwald's

monistic nature-philosophy that he constantly endeavors to promulgate in all directions not only its theoretical part, the rational world-conception, but also its practical manifestation, a wholesome conduct of life. The far-reaching reform of modern ethics which continues to advance in a gratifying degree in sociology and politics, in pedagogy and the management of schools, owes its inspiration in many directions to his rich and fertile imagination. It is our hope and desire that Wilhelm Ostwald will continue with equal energy and with increasing success in the seventh decade of his industrious life, upon which he is now entering, to bring about the enlightenment of mankind by means of pure science, and their true happiness by rational conduct of life.

CONSERVATISM AND MORALITY.

BY T. T. BLAISE.

THE conflict between progressive and conservative thought is as necessarily endless as is the antagonism between motion and resistance. It arises largely through a difference in viewpoint, although it is to be regretted that in numerous instances the conflicting opinions are due to sentiment, prejudice, bad logic, or a false, unwarranted conservatism, as also immoderate or progressive radicalism.

The thing that is, ever abhors the thing to be, unless the latter serves as complement or synergist to the former. The *status quo* of the present is ever the *status quo ante bellum*. The "I," the subject, stands in relation ever opposite to the object, and even the right hand of an individual is designated the antagonist of the left, and we scarcely find a muscle in a living organism that has not its fellow opponent. These facts lead many thinkers to adopt a dualistic world-conception. But however we may view existence we find endless activity and conflict as it were. And how could it be otherwise in a world where the new is the old in substance, but changed in form; in a world where the old must ultimately relinquish its body and soul to become a part of the new? Thus, individuals in observing these transforming concatenations, take sides, the one group favoring more or less the conservation and preservation of existing states, while the other contends for a hastier dissolution of the old; the one becomes a conservative, the other a progressive.

Moralists and ethicists of all times have always honestly and earnestly disagreed along this line. At the beginning of the Christian era the conservatives saw in the new Christian doctrines a progressive reform movement that seriously menaced their existing institutions of culture and religion. They strove to maintain principles and doctrines that to them had not been found wanting, and

had existed from time immemorial. But such has been the case with all cultural and ethical reforms. The new was always a menace to the old, and the conflict between the conservatives and the progressives was ever on.

Since the reformer is of necessity always a progressive, it naturally falls to his lot to be the aggressor. He is therefore generally looked upon as a disturber. In matters of state he is charged with political disloyalty, may be deemed guilty of treason and suffer banishment or execution, while as a religious reformer he meets a similar fate under the accusations of heresy and infidelity. It is rather a sad fact that so many of our noblest reformers, such as Socrates and Jesus among others, were executed for agitating principles which the conservatives of their time deemed inimical to existing conditions. These reformers were radicals, and their persecutors well knew what would happen to the social fabric if they were allowed to preach their doctrines unmolested.

This contest continues to-day no less lively, but in a modern form. Agitation in church and state still begets political and ecclesiastical odium, monarchies are threatened, dissolved and republics are born, cabinets are forced to resign, modernists and higher critics are menacing with disruption a staid and revered orthodoxy, school reformers are accused of introducing fads that are dangerous to the good old three "r's," Froebel is still denied admission in some schools by ultra-conservative educators, and even the sanest sanitary measures of modern science are under fire almost within gunshot of our most enlightened institutions of learning, not excluding Oxford, Boston and others.

But all this is not an unmitigated evil. Woe to that people who without investigation accept all reforms and innovations, for they must fare as badly as those who reject them dogmatically; both are destined to irrevocable decay and dissolution.

But the import of this all consists of the fact that the conflict between conservative and progressive thought involves the greatest problem concerning humandom, that of the *ultimate principle* of *right.* The conservative sees in the modern tenets an instability that smacks of pseudo-morality, and he calls it the "new morality." Since modern, scientific thought, science *per se,* is the offending promoter of this new morality, the accusation is directed against the "triumphs of science." On the other hand, the ultra-progressive sees decadence in the old tenets and accuses the old school of theological thought. Both, however, are contending for the establishment of that ever elusive *ignis fatuus,* the ultimate principle of right, an absolute

guide to moral conduct. It is the old transmutation dream of the alchemist, the Utopia of the optimist.

He who would proclaim an absolute and unfailing tenet as a guide for human conduct has hardly reckoned with the Master of concatenations. The problems of human life are infinite in complexity, as infinite as are the tasks and trials that accompany the endless moments. To be sure, there are rules that in a general manner cover groups of work-a-day problems, "shotgun" prescriptions, as it were, but it must be confessed even at the hazard of seeming radical, that all the principles and rules of ethics at our command are frequently inadequate as an unerring guide to our conduct. It would seem that nothing more disastrous could befall our future ethics, than to accept as sufficient and final our present code governing right living. Rules of conduct, moral, mental or physical, have their origin and foundation in the creative order of the world. Moral conduct must above all always mean adaptation of the individual to the All, or rather, there must be unison of aim between the individual who is the creature, and the Creative Process which is the Creator. The motive force of the individual and the process of creation must be identified, since the individual is a part of creation. If, then, there is such a principle or principles that are ultimate and absolute as a moral guide, we must seek them ever in the all-dominating creative order. Thus as we familiarize ourselves with the immutable law and order of all creation, so shall we likewise become familiar with the meaning of moral conduct, duty and humanity's religion.

True, many of the maxims of our past moral code given us by our immortal forebears are beyond contradiction of highest quality, and we may well consider them sacred and divine. They have guided us over a multitude of pitfalls, and, no doubt, shall do so for time everlasting. The maxim that man must be true to himself and others seems beyond question one that can never be contradicted, but after all, the maxim is but first aid to the needy, for the all important question is how always to be true, so that in each instance of human procedure the question demands solution anew. But granting that our old code of morals is quite adequate as a moral guide, who is there gifted with such prophetic foresight to assert that we shall never have another moral genius like Socrates, Mohammed, Lao-tze or Christ? Who would have the audacity to bid us shut our eyes against a future saint because the past, forsooth, had one? And if no one of equal luster should rise again on earth,

would that of necessity preclude the discovery of new laws governing human conduct? Let us hope not.

True conservatism at all times is commendable, but when it approaches the extremity of denying the future's competence to achieve what the past has achieved, then it loses the dignity of the name conservatism, and approaches something more akin to scepticism and prejudiced intolerance. At first sight it would seem that under the leaven of modern enlightenment such pseudo-conservatism were exceedingly rare, but it is abundantly prevalent among all so-called, strictly orthodox ethicists. These are usually men of intense moral and religious bent. Their chief, if not sole, authority, consists usually of a text, a ritual, a code of reputed supermundane origin, which last attribute renders all so-called "infra-mundane" authority incompetent as a test or criterion. Transcendental revelation, then, falls not within the pale of mundane adjudication.

From this it follows that there still prevails to a remarkable degree the notion that there are two classes of truths, the one divine and sacred, the other secular and profane. That one truth may possess a moral application and another not, goes of course without question. That man must be charitable is an injunction involving a moral worth, and is an indisputable truth, but that gravity tends toward the center of the earth is another truth, but devoid of moral attribute; that is, it is unmoral, not immoral. But gravitation is not to be looked upon as having no moral applicability. The law of gravitation enters so abundantly and intimately into the form of the human body, into the shaping of our sensations, our thoughts and very souls that we must acknowledge its application in the moral domain to no small extent. But this is merely reiterating the fact that in the realm of the creative order we must ever look for our principles of right living.

It is a quaint and yet perfectly natural excrescence of a defunct dualism that would have one truth more true than another. The "Holier than thou" notion is one of the tenacious logical obliquities of the race. A conservatism that defends a supposed truth against another on any other grounds than its intrinsic practical applicability in the realm of right conduct, defends it because of its reputed extra-mundane source, or because of antedating another truth, or because of the unique character of the person who first enunciated it, is a conservatism that harms both the truth it defends and assails.

But this species of pseudo-conservatism lies at the bottom of much of our present-day pseudo-morality. From it springs the notion that one day of the week is holy and six are secular. One

day we act as holy as we can, and six days we are,—I was about to say as profane as we can be. It is nevertheless true that on the week days we practice conventionalities that we refrain from on the Sabbath day for the sole reason that they are questionable. We know well the hollowness of it, but we continue the practice. Nor is that all. We carry this subversive standard of morals into our varied activities. We recognize "holy vestments," speak of the "divine cloth," make wearied and laborious pilgrimages to the "sacred Ganges" and kindred places, bow before sacred statues, altars and vessels, wear on our bodies for their amuletic charm icons, crosses, swastikas and an endless array of portentous and mystic accoutrements and oracular symbols and superstitious excrescences, all of reputed power to ward off evil, physical, moral and spiritual. Now science has no quarrel with these symbols as symbols, and does due reverence to the motives underlying them, but it is their employment as objects of miraculous and talismanic power that science condemns.

It may be urged that the belief in the miraculous power of the cross is a factor of great power in furthering the good faith, and besides we have seen a furious mob quelled by the mere display of the cross in the hands of a good priest, but ever and ever does science demand a reply to the question: would there have been any mob had these people been truly enlightened of the non-miraculous and true meaning of symbols? No class of humanity is more inflammable than the superstitious. It is these who would have a panacea for each illness as well as for moral afflictions. To follow in series each precedent and sequence to ascertain the several combined causes of a phenomenon cannot appeal to them, besides it is too laborious. A cause with one handle is to the man of nescience ever attractive. A succession of meteorological factors indicates fair or foul weather to the scientific thinker, but the "hang of the moon" has still its adherents among the countless simple folk who guard these quaint faiths with an unyielding conservatism. And as we ascend the scale of human intelligence we find these elements of an ultraconservatism lurking in the minds of even reputed thinkers. The one prefers the single-handed materialism to explain all phenomena, the other sees nothing but mind and spirit and denies even the existence of matter, the other sees it all in Buddha, or Kant, or Christ, or Darwin, each however deeming the others' doctrine in error.

Comes now the true conservative thinker who sees in neither of the various "isms" a panacea nor a solution of the moral problem confronting humanity. He prizes and praises with equal fervency, and with due candor, that which survives the test of truth, be it a

tenet of the extreme conservative wing or of the radical progressive. To him all data are of equal value, be they of the realm of biochemistry, psychology, ethnology or history both profane and sacred. In no one thing, in no one individual does he see the consummation of the "higher" knowledge, the ultimate principle of right conduct, but ever in immutable truth, in the revelation of the eternal, evolving process of the All does he see the true light that illumines the path that leads to man's destiny. To him the meaning of creation, endless creation, call it evolution, revolution, genesis, mutation, cataclysmic or catastrophic, is the meaning of the "Word of God." What the Creator *does,* that is ever of highest import to the true conservative scientist and scientific philosopher, and in these creative deeds he seeks revelation, he recognizes the unimpeachable revelation of the Author of creation, His will and Word. If he finds not here the providential pabulum whence spring our rules of ethics and morals, then science must stand condemned as a failure of having achieved its highest and noblest purpose.

Can it really be otherwise than that right conduct, moral behavior, means the harmonious adaptation of man's conduct to the creative motive, to the aim and purpose of the All-process? Is man in need of greater knowledge than that which gives him an insight into the immutable laws that govern his sole destiny, yea, moreover the destiny of his soul? The norm governing the evolvement of all things must be the true guide for rational beings who are the creatures of it. That act of man which is not in attune with the laws governing creation, that act is either unsanitary, immoral or impious—nay it is a degree of insanity. Live as God acts, and there will be less need of quarreling over what He is supposed to have said.

It seems without question that all the truths and maxims ever uttered, be they ever so sublime and lofty, ever so sacred and divine in character, are but a small part of all the truths and maxims yet to be learned. Nor can any new truth invalidate one single historic truth, but,—and here is the nub of it all,—*a modern truth may and can be of more practical applicability to modern conduct,* and let us note that there is only modern or present conduct. Past conduct belongs to the past and is unalterably as it was. But past truths and maxims live in the present and we may well be concerned regarding their preservation, but only against the influence of falsehood and the spurious need we defend them, never need we fear the unwholesome effect of a new truth upon an old one.

That the "light of science" and "its dazzling triumphs" may

have a material rather than an immediate moral tendency, is in a measure true. But this is only the inevitable temporary reaction following all innovations beneficent and maleficent. We cannot abolish the law of the moral pendulum and we must let it swing in obedience to the behest of Providence. When science deals with lavish hand it is then that man is apt to overindulge, but never can we condemn the blessings of science because of our shortcomings. So the novelty of a sudden triumph in science may raise man's sensual proclivities into a wave of immoderation, but the crest of this wave must in obedience to eternal law give way to the dip of the curve of cooler judgment and moderation. That we must endeavor to restrain indiscretion, irreverence, and overindulgence, goes without question, but what we must not do, is the inhibition and condemning of science. Though we abuse them, these new truths of science are all blessings nevertheless. They can never harm an older truth, though it be hoary with age. How otherwise could a modern truth affect a past truth than embellish it? Truth, ancient or modern, represents positive life in all its phases, biologic, moral and spiritual, while falsehood is life negatived.

To one whom modern culture and scientific triumphs imbue with a radiant hope for humanity's future welfare, nothing could have a more lamentable ring than the despairing deprecations of Rev. Orde Ward in *The Open Court* of December 1912, viz., that "the danger seems to be, that practical ethics, or ethics of the gutter, in which right yields precedent to the expedient, will eventually be the confessed creed of the world," or that "we seem returning to something immeasurably inferior to ethnic morality"; or that "nothing just now seems to be taken seriously, and perhaps least of all the sacred," etc.

This attitude has a note of gloomy and despondent foreboding. It is a conservatism begotten by a fear lest the triumphs of to-day will bring decadence upon the "religious and ethical standards" of the past. It is a note of alarm and warning that "dislocation of establishments suggests, if it does not create, dislocation of the sanctities." It has of late become quite fashionable among writers on ethics to "view with alarm" the present civilization. The cry of a negative conservatism, that "the civilized world is in a state of decadence," as a prominent educator recently proclaimed, is, to say the least, bad philosophy. It is quite untenable, difficult to verify, and its effect upon society is decidedly open to suspicion. And this in the face of our increasing number of institutions of charitable and eleemosynary character, the raising of the standards

of these institutions from one of humility to that of at least a semblance of respectability, the reform movement in the management of our criminals and institutions of correction, inaugurating a training and educational method in place of the old "eye for eye and tooth for tooth" method of vindication and revenge, the multiplying of hospitals, schools, libraries, the increase of philanthropy among rich aristocracy, especially in America, the Hague Tribunal, the organization of a formidable International Peace Society who advocate with the Carpenter Philosopher the principle of "Peace on Earth" and are trying to do literally what others for twenty centuries have only preached, and believe firmly that soon "Neither shall there be war any more."

True, in many instances the glamor and dazzle of modern, scientific discovery and invention entices the irreverent individual to rush on as if bereft, and trample under foot the sanctities of established society, and yet, modern states of irreverence need have no alarm in a competitive comparison with analogous states of irreverence of the past. It is not necessary here to recite *ad nauseam* the lax morals of our ancestors, for they are only too well known, besides, it were a pleasanter task to point with pride to those indomitable human characteristics by dint of which the race forged ahead to the present state of high culture in spite of the moral morass it encountered through the centuries.

But where does the conservative alarmist chiefly err when he characterizes our present civilization as lacking in due appreciation and reverence for the sanctities and moral tenets? Let us consider:

To the scientific thinker it can but seem strange that upon science the blame is so often saddled for modern epidemics of moral obliquity. In no sense can science itself be conceived as being either moral or immoral; at most we might acknowledge that science is un-moral, possessing no moral qualities at all; that is, science as a method or system of investigation and research, as a means of acquiring pure knowledge and facilitating revelation, can no more possess the attribute morals and ethics than can time possess the quality of color, and space the property of energy. Nor does it seem aught but maudlin to suppress, or put a restraint on science, because, of its very efficient productivity, weaklings succumb to too much milk and honey.

There is, however, a justifiable element of alarm in the fact that science in its quest for truth is ruthless and unsparing, is devoid of sentiment and compassion, dealing death to the false and spurious regardless of rank or color. To the orthodox conservative this

must on occasions give rise to offense, especially when an old authority is found wanting in the test of a relentless crucible. And it is likewise true that its "dazzling triumphs" do intoxicate at times the hoity-toity class of thoughtless beings to the extent that they lose sight of the sanctities and the sacred side of existence. But because of this it does not at all follow that the blessings of science are a curse.

It is an old and homely saying that a weak man can not stand prosperity. This man, however, succumbs under prosperity not so much perhaps on account of an evil bent, as he does because of his inability to adjust himself to a new and unaccustomed condition of plenty. The moral laws governing a poor man's conduct demand a different application than in a state of prosperity. That the mendicant must obey a somewhat different code of morals than the opulent individual, may seem at first sight paradoxical, yet let those numerous unfortunate ones who perish under the change from mendicancy to opulency attest. But the important point here sought is the unimpeachable fact that moral conduct is a question of adaptivity to dominating conditions.

Man's life is an interminable succession of contacts with the objective world, and for each contact he must render a moral or ethical judgment either consciously or subconsciously, *nolens volens*. No one can in advance project a code of guidance that will solve human problems as they are met. This were only possible if he knew actually the conditions of the subject acting and the object to be acted upon. And let us emphasize that *act* is the word *per se*, for acts alone can be moral or immoral. Though we say, this man is moral, it is in fact not he who so is, but his acts or deeds are so or not so. In a narrow sense we may term his desires, or the inclinations of his will moral or immoral, but only as mental acts can they be so, for who sins in thought must think a wrong act.

Now, since act or deed always involves irrevocably the object to be acted upon, because in this world of unbroken continuity action implies of necessity interaction, is it not then paramount to our moral acumen that we scrupulously familiarize ourselves with the existing world in a scientific manner, learn to comprehend the laws dominating subjective and objective existence, acquire a sane conception of the laws governing sanitation and of the ever impinging elements of destruction and construction, and at least render Dame Science the homage due her as an incontestible and impartial revealer of truth?

It is therefore time we cease laying at the door of science the

blame for the shortcomings of our moral rectitude. Nor should we restrict the attribute of sacredness to isolated pretexts and writings, or to some of the objects of antiquity and here and there a historic individual. Though trite, it is true that "holy is that holy does"; nor does it matter when or where it does holy. A maxim's value does not depend upon its authorship nor time of birth. A truth is a truth though it issue from the mouth of Ananias, and a falsehood is not the less so if uttered by a saint. Human language is exceedingly amenable to error. The truest prophet has but the language of mankind with which to convey and express his truths. Even though his truths were infallible, his language is of necessity fallible. And in ancient times, or, to be accurate, in all times, language had to be guarded so as not to offend the conservative authorities, because many an unguarded word led to the execution and imprisonment of many a noble reformer. It is no small wonder that so many of the old writers resorted to parable, similitude and allegory. This fact burdens many of the old texts with perplexing ambiguities.

It is in part also due to this fact that all systems of morals and religion develop sooner or later internal dissension and then more or less conflicting factions and sects. The spirit and the meaning of the text we may deem sacred, but the words intended to convey these, they are the husks and dross enveloping the golden kernel within. Thus conflicting interpretations must ensue, and what other than science, the method of truth, can come to the rescue? In no other realm can science do greater service for man than in the domain of moral and precept, and instead of an enemy, it would become, if permitted, the defender of true ethics and religion.

The true scientist recognizes in all things an inherent divinity and sacredness. This is good orthodoxy, for the lexicon defines the word "divine" as "proceeding from God, appropriated or pertaining to God," etc., etc., and since all would seem to proceed from God, all must be divine. He with due reverence recognizes the fact that to certain objects, especially historic, there attaches a lofty or sacred sentiment, but cautiously avoids the common error of revering the symbol instead of its message and purport.

The custom of ascribing sanctity and divinity exclusively to a few score of objects, such as scripts, vestments, rituals, and various acoutrements and paraphernalia, is not altogether an unmixed blessing to our moral habits. The odd dual conception of a part sacred and divine world, and the other part secular and profane, has led to its logical consequence, inasmuch that we now entertain something like contempt for "common things," and even our nearest kin we

assign a place outside the pale of holiness and divinity. In fact, we live as if this were a dual world, constituted of a divine spiritual quantum, and a corrupt, material one. It is remarkable how we carry this into our every-day activities. Cults and numerous systems of so-called philosophy are waging war against the "unholy and material." We associate under the same meaning "sin and flesh," speak of the "temporal earthy," of this "vale of sin and corruption," of six secular days and one "holy" one,—nay, this double standard of ethics has become so fundamentally impregnated in our soul-fabric as to form a dominant factor in our every-day moral judgments. It ultimately leads to that form of ultra-asceticism which regards life on earth as a term of penal service, a reformatory.

But true, modern conservatism, tempered and guarded by science as the conservator, tends more and more toward a monistic world-conception, seeing in all things a common origin and destiny. It knows of no cleft between subject and object. Its adherents do not fear the invasion of the new, since the new is but the old in change of garb. In all existence they see the throb and meaning of divinity, and inasmuch as this be true, so much must all existence be divine. Thus they deal with things godly alway, and thus they would fain bid the habitué of the old double standard morality turn about face and behold in all creation and creature a compelling majesty, a true divinity,—nay, more, he shall behold all things dominated by a unifying mandate that bids him fraternize in good fellowship with all existence. Thus the true scientist finds himself always in the realm of God, and with him obedience to His laws alone means success, and disobedience leads to defeat, morally and physically. To him Christ is nearer than is commonly accepted. He meets the Good Man from Galilee in his daily walks.

"I heard a child's cry tremble up,
And turn to share my scanty cup.
When lo, the Christ I thought was dead,
Was in the little one I fed."

Nor does he see the world through the eye of pessimism. Here on earth within reach of us is all worth having:

"Here, here, on earth I find it all—
The young archangels white and tall,
The Golden City and the doors,
And all the shining of the floors."

The modern conservative ethicist does in fact reject in form, and in form only, the sanctities and precepts of the old orthodox conservative. He does not reject the faith in immortality, but with

him immortality is a law far more than a mere belief. All things in existence are in essence immortal, that is, he knows that man and all are immortal, and, be it observed, he has no fallacious idea of the meaning of knowledge. Knowledge can only be relative and never absolute, that is, our knowledge of the objective world.

The old concept of heaven has also undergone a change of form in the mind of the modern thinker. Heaven has become a reality to him as much as bread and butter, and he has transformed the concept of heaven into a condition instead of a place. Modern man lives fast and furious, and he is impatient to wait for the celestial heaven, but has set out with a will to build a terrestrial one. He finds earth God's workshop, and has become well pleased with it himself. He finds here the material and the tools to construct and bring about that condition which his forebears called heaven, and who can foretell his eventual result?

"To be sure," said one of these modern philosophers of cheer to the writer, "we are going to have heaven on earth, and it is a simpler project than some might imagine. I enjoyed a respite in heaven the other evening literally for the pittance of a twenty-five cent admittance price. It was like this: A small girl scantily clad came along the street weeping until I thought her heart would break. She was apparently searching for something and she could not see me for her tears. Upon inquiry I learned that she had lost the piece of coin that was to purchase the supper for the family, and that this caused a calamity of no small scope in the household. To the little one it seemed something irreparably awful, for she entertained no further hope of finding her lost treasure. Right here I then and there violated the 9th commandment. I told that grief-stricken child that I had found her money and gave her the amount she alleged to have lost. When I saw the light of joy displace the anguish in her face and listened to her effusive expression of gratitude, I experienced that soul-feeling called heaven, or at least that should be denominated heaven. Yes, you are right," he concluded, "man can and will master the art of being happy on earth, and trust God to see to the life beyond."

This man intentionally prevaricated so that he might not in the least degree fail in giving a full measure of happiness to a grief-stricken child. Nor did he stop to think about the sanctity of a holy mandate, "Thou shalt not lie." He is a man who has faith in modern sanctities. He does not pray, "Give us our daily bread," because he wants to earn it in the sweat of his brow. In fact the modern world has turned earners. Witness the present-day conflict

for the "job"! Men commit crimes to procure labor, the mere right to work. Idleness and vagrancy are almost universally condemned by laborers. Time was when the problem how to make men labor demanded solution, now they appeal to court for the privilege to labor, and resort to violence to further their end. Labor bureaus both private and public dole out jobs at a premium. A distinctly new enterprise has sprung into existence, and it is typically modern; it is the labor-giving enterprise. If men still believe in the happiness of idleness, they have at least learned that they must procure idleness through arduous labor. The sense of duty is a distinctive characteristic of modern man. He has ceased to pray, "Give us our daily bread," but has formulated a new "sanctity" and prays, "Permit us to do our duty." What prophet of the past dreamed that in *anno Domini* 1914 we would be called upon to solve the problem of how to give men as much employment as they want?

Our sane aristocracy know this. Our silly aristocracy are the only remaining vestige of humanity who do not know that in labor there is true dignity and genuine sanctity. Achievement to-day ranks above preachment. Doctor Montessori has startled the world with a new system of education, the chief feature of which is that she relies upon the child's sense of duty to initiate its own method of learning. This profoundly religious and highly cultured woman avoids to a large degree all mandate and "thou shalt or shalt not." She would not dwarf the divine will and freedom of the child, and acting under this principle her success has been in many instances almost marvelous. She laid aside old rules of conduct and looked into the soul of a child, finding there a new sanctity, a sermon, a commandment which reads, thou, father and mother, shalt obey thy children. Thus she not only lets little children come unto her, but she has learned to obey them.

We need not, then, be immoderately alarmed at the turn modern ethics is taking. The old and sacred precepts are not as much cast aside as they are applied to modern conditions. The Good Samaritan of to-day wears the garb of a Jane Addams, and she is indeed a modern representative of the olden types of saint and saviour. Even a modern artist had the temerity to paint female angels which brought upon him much criticism and odium from the orthodox conservatives, and for a time furnished the press attractive copy.

The modern Good Samaritan plies his craft of charity on a different scale than his prototype of old. He profits by the aid of science and method. He does not carry the stricken victim to his home and there nurses him. This would be exposing his family to contagion

and disease. Society to-day strives hard to supply the unfortunates with asylum and home. Organizations carry on a veritable enterprise in caring for the helpless. Commercialism, however crass some of its features may seem, has transformed Good-Samaritanism into a colossal business corporation that encircles the earth, but has retained the original essence of the altruistic motive, and through the aid of scientific development has heightened its efficiency. Scientific charity means Christian charity reduced to a science, systematized, coordinated and rendered effectual with modern appliances of power and precision. One of its chief aims is also to reduce the cause of pauperism, rather than alleviate. Prevention and the knowing how to prevent has become its great aim. The eradication of hovel and slum, the purifying of air, water and food, the cleansing of streets, public places, conveyances and buildings, these and countless other measures for immediate results, and then general race betterment and eugenic improvement for ultimate results, all these are distinct phases of modern charity and good will on earth to men. We might mention that colossus of civilization, the public school, for this is indeed the greatest and most efficient charitable institution of all times, and how distinctly modern in its mode and method! These are to-day some of man's ethical forces that make for heaven on earth.

The heaven *post obitum,* it must be confessed, is becoming a more secondary consideration, for the welfare of the present life is making greater and greater claims on man. To reach heaven by worshiping the Architect has become somewhat obsolete, but to help the "least of these" and then take chances on heaven is getting decidedly popular. It is the philosophy of doing; doing rather than enjoining others to do, acting instead of asseverating, performing of duty instead of preaching duty.

If the world has become less God-fearing, it has become more God-law respecting. Man is acquiring a wholesome regard for the laws and principles dominating creation in its varied phases. No man of research, investigator, educator, discoverer, moralist, and religionist can for a moment afford to disregard them. They dominate soul and body and shape the destiny of all things. If they are not the word of God, they are the compelling *modus operandi* of the Word. They are immutable, but themselves the cause of all mutations. Though imperishable, by their behest all present forms must perish to be transformed into their irresistible equivalents. But never need edict or precept fear these laws as long as either is in attune with them.

And so it has come about with the sweep of time that the

beautiful romance of the Star of Bethlehem interests men less than Arcturus, nebula and cluster stars. These have become more and more replete with presages of a wondrous revelation. When,—nay, how soon will flash from that starry silence of eons startling messages on wires of ether, bearing tidings of the life romance of strange races in the skies, bearing epic and slumber song that lulled to sleep the skyman's babe! The cradle of man has journeyed from Eden to the very border of the archaean.azoic realm. Not content. comes now a venturous Arrhenius and proclaims the birth of man in pre-archaic cosmic dust.

"Though old, though new
What does it mote,
If tale and rote
Are only true?"

TIME.

BY THE EDITOR.

A WISE philosopher with gloomy look
Sat in his easy chair before his desk;
And, thinking of old King Solomon,
Said, "All is vanity beneath the sun."
Then he took pen in hand, and thus he wrote:
" 'Tis Time which maketh all things vain:
The past is gone as if 't had never been;
The future, ever distant, never comes
But as the present; and the present, lo—
The moribund, the ever-dying present—
It disappears into the dread, dead past,
Never to rise again from out its tomb.
What difference then between the rotten bones
Of noble lion and of curséd cur,
Of king or hero, and a wretched beggar!
What difference then how life be spent! 'Tis Time
Which stamps its woeful seal of vanity
On all existence. Now we live and flourish;
We glory in our strength, yet are we doomed;
Alas! The morrow finds our place no more.
Oh, tyrant Time! Oh, King of Vanity!
Thy breath 'tis makes the sweetest roses fade;
Thy breath acts like a bane; it proves the curse
That blights life's health and glory, and brings death."

There loomed a figure from the living present
Awful in majesty yet wondrous mild.
'T was Time himself in his unfading glory,
The ever young and yet the ever old,
Eternal Time, archangel of creation,

And smiling he looked down upon the sage.
Quoth he:
"Poor mortal, blinded by thy wisdom
Thou dost not know what Time Eternal means.
I harbor in my bosom all that was,
That is and ever will be: All the past
Is here, here in the ever-living present,
And all the future lies within my grasp.
I shape it; it will be my handiwork!
Whate'er I touch is actual, it partaketh
Of the eternal, of my own true being.
The thoughts of God I render real, change
Things possible to facts."
Aloft rose Time,
And with divine compassion he looked down
Upon the ignorant of human kind,
Upon the frivolous, the multitudes
That do not think, and as a still small voice
In deepest depths of their subconscious conscience,
He made appeal to them: "Ye thoughtless, hear!
Hear, ye deluded mortals, and give heed!
And what I tell you is the truth of God,
'T is th' eternal truth that never changes:

" 'T is not indifferent whate'er ye do,
Evil or good. Whate'er ye do is done
For better or for worse. No power on earth,
No god in heaven can make a deed undone.
Whate'er ye do, forsooth, becomes established,
And thence 't will be immutable for aye.
Imbedded in the universal structure,
'T will be a building block of your own make
As an enduring part of cosmic life.
And mind the truth, 'Ye are your own creators.'
Whate'er ye do, ye are yourselves; and ye
Are called upon to make the best of life,
To change, each in his sphere, the world for better.
Yea, ye can do it! Therefore heed my word:
Whate'er ye do is not indifferent.
In all your doings ye do shape yourselves
As ye shall be for all eternity,
And thus ye shape eternity itself.

With God Almighty, as His own true children
And His co-workers, ye participate
In moulding this great Universe of His."

Time paused awhile and let his searching eye
Glance o'er the motley crowd of human kind
Which throngs the world's kaleidoscopic show.
How all these puny creatures hate and love,
How wildly do they struggle; and they scramble
For worthless goods but leave the pearls of life
Unheeded by the wayside! Father Time,
Their guardian, endureth patiently
Their many follies, wickedness, and crimes.
He stands unmoved by errors and by failures,
And smiles at their uncounted vanities.
Divine forbearance hushes in his mind
The bitterness and the contempt he feels,
And now his speech rings with benevolence:
"Surely, I cherish all whoe'er they be
As types of the attempts at actualizing
The aspirations that ensoul their hearts.
I treasure every one of them, be they
Marked characters of greatness that would boldly
Not shrink from aught and dare to be themselves,
Or be they weaklings, commonplace and humble.
They all are welcome, I preserve them all,
Yea, even for the wretch I have a place
And hold him safe in my impartial hand.
But most I treasure those rare noble souls
Who their own selves will freely sacrifice
To live for greater aims, for higher purpose.
I watch all creatures in their origin,
I see their growth, becoming, and decay;
I hold them all and I preserve their types.
All stay with me, all help me to work out
The future which they long for."

Thus Time spake
And pointing to the future, he addressed
The living generation of the present.
In fatherly and mellow voice, he said:
"A special message have I for each child
That enters life, a message which the youth

Should mind when he begins to be himself
And shape his destiny with clearer vision.

"O listen, youth, consider life's great boon!
I offer thee a chance to be thyself,
And to immortalize thy better being.
Rise to this glorious opportunity
And act as thou wouldst fain have acted, when
After thy death thou couldst revise thy doings.
Abstain from deeds thou surely wouldst regret
When thy allotted time of life be spent—
From deeds which then thou wouldst have left undone.
Yet do accomplish with thy utmost vigor
What then in having done thou wouldst take pride.
Dare be thyself, yet shun all selfishness,
Shun wrong, shun hatred, vanity and greed.
Give to thine inmost being real life;
Work out the aim that lurketh in thy soul.
Nor fear the joys of life nor shrink from pain.
Be as thou wouldst endure eternalized,
For life is not indifferent nor vain,
And as thou actest so shalt thou remain.

MISCELLANEOUS.

ARTICLES BY HAECKEL AND ABOUT HIM.

In connection with the present number which is chiefly devoted to Professor Haeckel and his work we here append for the convenience of our readers a table of references of articles by Haeckel and about him which have appeared in *The Open Court* and *The Monist* in former years.

Articles by Haeckel.

Goethe on Evolution (1890). *O. C.*, IV, 2111.
Phylogeny and Ontogeny (1891). *O. C.*, V, 2967.
The New Course of German Politics and the Purport of Its World-Conception (1892) *O. C.*, VI, 3215.
Our Monism: The Principles of a Consistent Unitary World-View (1892). *Mon.*, II, 481.
The Problem of Progressive Heredity (1894). *O. C.*, VIII, 3975.
The General Phylogeny of the Protists (1895). *O. C.*, IX, 4401.
The Kingdom of Protista (1895). *O. C.*, IX, 4423.
The Cellular Soul (1895). *O. C.*, IX, 4439.
The Phylogeny of the Plant-Soul (1895). *O. C.* IX, 4458.
Epigenesis or Preformation (1895). *O. C.*, IX, 4513.

Articles About Haeckel.

Paul Carus—Professor Haeckel's Monism (1892). In answer to Haeckel's "Our Monism." *Mon.*, II, 598.
Haeckel's Panpsychism (1892). *Mon.*, III, 234.
Haeckel's Confession of Faith (1893). *O. C.*, VII, 3528.
Haeckel's Work on the Artistic Forms of Nature (1902). *O. C.*, XVI, 47.
The Haeckel-Loofs Controversy (1903). *Mon.*, XIII, 24.
Haeckel's Theses for a Monistic Alliance (1906). *Mon.*, XVI, 120.
Professor Haeckel as an Artist (1906). *O. C.*, XX, 428.
A Visit with Professor Haeckel (1907). *O. C.*, XXI, 615.
Monism of *The Monist* compared with Haeckel's Monism (1913). *Mon.*, XXIII, 435.

Thomas J. McCormack. Professor Haeckel's New Philogeny (1895). *O. C.*, IX, 4369, 4401, 4423, 4458.

Paul von Rautenfeld. Haeckel's Theses: A Protest (1906). *Mon.*, XVI, 626.

Otto Herrmann. The Monism of the German Monistic League (1913). *Mon.*, XXIII, 543.

C. W. Kendall. Reflections on Immortality; Chap. XI of Haeckel's *Riddle of the Universe* (1913). *Mon.*, XXIII, 595.

CURRENTS OF THOUGHT IN THE ORIENT.

BY B. K. ROY.

Jagadish Chandra Bose and His Resonant Recorder.

Ask any educated man in India who the greatest of all living scientists in that country is, and the unanimous reply will be—Dr. Jagadish Chandra Bose. Dr. Paul S. Reinsch thus writes in his *Intellectual and Political Currents in the Far East*: "While it is the genius of India to be imaginative and philosophical, the Hindus are by no means lacking in capacity for accurate scientific work. That they are thus gifted has been abundantly proven by the achievements of such men as the renowned physicist, Dr. Jagadish Chandra Bose, who is by many considered to be the first inventor of wireless telegraphy; and of P. C. Roy and Gazzar, both noted chemists."

In the October *Modern Review* (Calcutta) Dr. Bose (author of *Plant Response, Comparative Electro-Physiology* and *Researches on Irritability of Plants*—all published by Longmans, Green & Co.) contributes an interesting article in which he gives an account of his newly invented "resonant recorder" by which the speed of nervous impulse in plants may be automatically recorded.

"All plants," says Dr. Bose, "are sensitive, and in certain plants there are tissues which beat spontaneously like the heart-beat of the animal. These throbbings are affected by drugs precisely in the same manner as the pulsations of the animal heart are affected by similar circumstances. As regards the electric response, the writer had in the year 1901 in his Friday evening discourse before the Royal Institution demonstrated the identical nature of reactions in the plant and in the animal. There remained only the question of the nervous impulse in plants, the discovery of which was announced by the writer ten years ago. It took, however, all those years before his conclusions found full acceptance by the publication in the *Philosophical Transactions* of the Royal Society....

"Though the effects produced in the animal and plant are so similar, yet from the results of certain experiments carried out by the leading plant physiologist, Pfeffer, it had been definitely settled that in the plant there is nothing corresponding to the nervous impulse in the animal. The effect transmitted in the plant is supposed to be one of hydro-mechanical blow and not of true excitation....

"The question of nervous impulse in plants has thus to be attacked anew and I have employed for this purpose twelve different methods. They all prove conclusively that the impulse in the plant is identical in character with that in the animal. Of these I give below a short account of three different methods of investigation. It is obvious that the transmitted impulse in Mimosa must be of an excitatory or nervous character:

"1. If it can be shown that physiological changes induce appropriate vibration in the velocity of transmission of the impulse.

"2. If the impulse in the plant can be arrested by different physiological blocks by which nervous impulse in the animal is arrested.

"3. If excitation can be initiated and propagated without any physical disturbance. The central fact in the mechanical theory is the squeezing out of water for starting the hydraulic impulse. The hydro-mechanical theory must necessarily fall to the ground if stimulation can be effected without any mechanical disturbance whatsoever.

"The research ultimately resolves itself into the accurate measurement of the speed with which an impulse in the plant is transmitted and the variation of that speed under changed conditions.... In making these measurements the results are vitiated by our personal limitations. The conditions of the experiment demand accurate measurements of time-intervals shorter than a hundredth part of a second; but sluggishness of our perception makes such an attempt an impossibility. It is therefore absolutely necessary to invent a special device by which the plant itself should be compelled to write down the propagated speed of its own excitation."

So Dr. Bose after constant application with his characteristic assiduity invented his "resonant recorder," of which he says:

"The principle of my 'resonant recorder' depends on a certain phenomenon, known in music as resonance or sympathetic vibration. We may be so tuned as to thrill to certain notes and not to others. An artificial ear can be constructed to resonate to a sound of a definite pitch. The drum of the artificial ear is made of thin soap-film; a beam of light reflected from its surface forms characteristic patterns of color on a screen. To various cries this ear remains deaf, but the apathy disappears as soon as the note to which the ear is tuned is sounded at a distance. On account of sympathetic vibration the artificial ear-film is thrown into wildest commotion and the hitherto quiescent color pattern on the screen is now converted into a whirlpool of indescribably gorgeous colors of peacock green and molten gold.

"In the same manner, if the strings of two different violins are exactly tuned, then the note sounded on one will cause the other to vibrate in sympathy. We may likewise tune the vibrating 'writer' with a reed. Suppose the reed and writer had both been tuned to vibrate a hundred times in a second. When the reed is sounded the writer will also begin to vibrate in sympathy. In consequence of this the writer will no longer remain in continuous contact with the recording plate, but will deliver a succession of taps, a hundred times in a second. The record will therefore consist of a series of dots, the distance between one dot and the next representing one hundredth part of a second. With other recorders it is possible to measure still shorter intervals. It will now be understood, how by the device of the resonant recorder we not only get rid of the error due to friction, but make the record itself measure time, as short as may be desired. The extraordinary delicacy of this instrument will be understood when by its means it is possible to record a time interval as short as the thousandth part of the duration of a single beat of the heart.....

"The plant has thus been made to exhibit many of the activities which we have been accustomed to associate only with animal life. In the one case, as in the other, stimulus of any kind will induce a responsive thrill. There are rhythmic tissues in the plant which like those in the animal go on throbbing ceaselessly. These spontaneous pulsations in one case as in the other, are affected by various drugs in an identical manner. And in one case as in the other, the tremor of excitation is transmitted with a definite and measured

speed from point to point along fiber-like channels. We have now before our mind's eye the whole organism of the moving, perceiving and responding plant—a complex unity and not a congeries of unrelated parts. The barriers which separated kindred phenomena are thus thrown down, and the animal and the plant are seen to be a multiform unity in a single ocean of being."

The Problem of Irreligion in Japan.

In his paper on "Can We Ignore Religion?" in the *Japan Magazine* for December, President Masataro Sawayanagi of the Imperial University of Kyoto complains in a rather pathetic tone of the decadence of the religious spirit of Japan. He says:

"The present prevailing indifference to religion in Japan seems to me fraught with exceeding danger to the country. The degree in which religious motives influence the minds of the young men of Japan to-day is very limited indeed. But both history and experience teach that the more genuine religion pervades the national mind, the better for the country. That religion is an essential element of all high civilization goes without saying....Religion, as known among the Japanese to-day, means something suited to soothing the declining days of the aged and unfortunate. It is obviously not a power over the mind of youth; certainly not to the extent that it is in the west....In Japan we have nothing at all like the admirable influence that the church is exerting in the west. There is a complete divorce between youth and religion in Japan; and the consequence is that in times of moral and mental distress our young people are all at sea.

"How to create a stronger aspiration after faith among the people is one of the pressing problems of Japan. It is a task involving tremendous difficulty....Religion is not something to get; it is rather an atmosphere to live in. If we are to find God, may it not be by abiding in Him rather than by endeavoring to contain Him? What Japan lamentably lacks is this atmosphere. Listening to evangelistic orators and trying to catch the inspiration of great teachers are all well enough, but what the nation needs most is to create an atmosphere wherein religion can feel at home and grow till all men are enveloped in it. Let this divine atmosphere pervade the home and the community and the miasma of irreligion must inevitably disappear....

"Where then is the youth of Japan at this time to find the authority that should be obeyed? He will find it in the obligation that attaches to all good. The moral and spiritual laws that compel the best of men to right conduct are equally binding to all. There is no higher authority than that of righteousness, the motto of our present era. Man should lead a rational life; and it is irrational not to obey and follow the best. And the best is not necessarily the new. The best is that which has the authority of right, an authority that is very old, though always growing stronger because better appreciated. Good manners and customs are based on this authority, and such manners and customs are binding to all true men. Therefore let our young men follow in the way that leads to life."

The Tug of War in China.

Immediately after the southern revolution Dr. Sun Yet Sen issued the following manifesto:

"During the period of the union of the North and South I recommended Yuan Shi Kai to the consideration of the national council, in the belief that

he would be true and loyal to the public and act according to the expectation of our countrymen. Ever since that time I have avoided power and interest, and have supported him whenever he was beset with danger and suspicion. Unexpectedly Yuan's treachery was wholly exposed by the murder of Sung. At the time, I published to the world my determination to oppose Yuan. If Yuan understood that public opinion could not be gainsaid, he should have resigned his office then. Unfortunately, Yuan is working solely for himself, and has shaped his actions accordingly in direct opposition to the people's desire, culminating in the people of the south-east taking up arms against him. Judging by the general situation, the safety of the nation and the vitality of the people will all depend upon Yuan alone, upon his remaining in or retiring from office. Although Yuan is a public servant, he is not only disregarding the welfare of the nation, but, on the contrary, he is willing to sacrifice both the country and the people in order to strengthen his own position. No such precedent should be permitted to be created in the republic of China."

The Chinese governmental reply is couched in the following words of General Yuan Hung:

"The present rebellion is founded on nothing but the personal ambition of certain men. The principal persons responsible for this rebellion are Huang-Hsing and Sun Yet Sen. Hardly was the republic formed when they began to scheme to get Yuan Shi Kai out of office. They have never supported him sincerely. Sun Yet Sen had nothing to do with the actual work of overthrowing the monarchy. The revolution was finished when he reached China. The world has a false idea about him. If Sun Yet Sen provided any tangible aid to the real revolution, I did not know of it. The least said about Huang-Hsing's military services to the revolution the better. The crowd squeezed $30,000,000 while it controlled the Nanking provisional government."

Let our Chinese friends of all parties remember that united they stand, divided they fall, for enemies are at their gates.

BOOK REVIEWS AND NOTES.

HAWAII PAST AND PRESENT. By *W. R. Castle Jr.* New York: Dodd, Mead & Co., 1913. Pp. 242. Price $1.25 net.

The author was born and brought up in Hawaii and his account of the islends will be of particular interest to all Americans who may have an opportunity of visiting or settling in this beautiful territory recently acquired by the United States. The book is well illustrated. It is best characterized in the author's own words, who writes in the preface:

"This book has a double purpose: to tell those who stay at home something about Hawaii, the youngest of American territories; and to help those who are going there to plan their trip intelligently. Baedeker has not yet extended his labors to the Pacific islands, and no guidebook is available for the traveler. Many books have been written about special phases of Hawaii—its history or its commerce or its industry—but none has attempted to give concisely a survey of its history, its present conditions, and its natural beauty.....The information it contains has been gathered from most diverse sources, books, pamphlets,

and even railroad folders, the whole checked by my own personal knowledge. The facts, I am sure, are accurate. The descriptions are largely from my own observations, and I have tried not to fall into the error of exaggeration so common in books of this kind.

"The very comprehensiveness of the book has made it difficult to write. It would have been easy to devote all the space to discussion of industrial conditions, or of the Hawaiian people, or of the volcano, but this would have been to write an essay for specialists. It would have been still easier to tell of my own boyhood experiences on the funny little inter-island boats, but this would have resulted only in another "Diary," this time of a quite ordinary boy. I have tried, however, to keep myself in mind in so far as to tell things as I myself have seen them, expressing so far as possible in the descriptions my own feelings about the scenes described. And I hope the book may do something toward stirring in others an interest in Hawaii, an interest which, with fuller knowledge, must issue in something of the affection for the islands that is felt by all of us who have spent there our childhood days." K

THE WALLED CITY. A Story of the Criminal Insane. By *Edward Huntington Williams, M.D.* New York: Funk and Wagnalls, 1913. Pp. 263. Price $1.00 net.

Although Dr. Williams was for fifteen years on the staff of more than one public institution whose duty it is to care for the criminal insane, he is not now connected with any of them in an official capacity. He is therefore able to give a true picture of the daily life that goes on in these institutions "untrammeled by the restraint that curbs the person holding an official position, the bias that blinds the former inmate or the mere surface knowledge of the outsider." Most people will be surprised that his picture is not a more somber one, but, as he says, there are high lights in every picture. Incidents which to most of us will seem new and startling are but commonplace facts to those familiar with the subject. The various chapters deal respectively with Types of the Insane, Social Position, Law and Order, The Citizens at Play, The Law's Long Arm, The Shortcomings of the City Rulers, Wits *vs.* the Long Arm, The "Shot," Contented Citizens, When Danger Threatens the City, Injustice Within the Walls, The Effects of Good Government. All are interspersed with pertinent and interesting anecdotes. The book is illustrated with fifteen photographs giving interior and exterior views of the asylums at Matteawan and Dannemora in New York, and Overbrook, New Jersey. P

DIE MUSIK ALS TÖNENDE WELTIDEE. Versuch einer Metaphysik der Musik. Von Curt Mey. Leipsic: Seemann. Pp. 398.

This work has been undertaken with serious purpose and in a serious spirit, and the author expects and desires it to meet only serious readers. The reader need not be a professional musician—in fact Mr. Mey considers many such specialists too uncultured and onesided to comprehend the significance of his work—but he is required to have certain other definite qualifications: In the first place, advanced general education, especially one of a seriously philosophical character; he must be familiar with Schopenhauer's philosophy and

must know intimately and thoroughly understand the writings of Richard Wagner, especially his "Beethoven"; and he must have some knowledge of musical notation and if possible also of the elements of the theory of music and of piano playing. By these stipulations we can see how highly Mr. Mey regards the philosophy of Schopenhauer and the principles of Wagner. The chapters of the first volume—devoted as a whole to a consideration of "the metaphysical primitive laws of melody"—have the following headings: (1) On the connection of esthetics with the main doctrines and systems of philosophy, and also on the development of the metaphysics of music previous to Arthur Schopenhauer and Richard Wagner; (2) Classification of music for the purposes of the present investigation and a survey of the historical development of music with reference to this classification; (3) The orchestral overture to "Rhine Gold" as a musical expression of the evolution of life on our planet; (4) Remarks on the various intervals—derivation of the fundamental law of intervals; (5) The first metaphysical law of melodics combined with the law of intervals: the motive of assertion or becoming; (6) The second law of melodics, etc.: the motive of negation, or death; (7) The third law of melodics, etc.: the motive of weaving, or will; (8) The fourth law of melodics, etc.: the motive of life or knowledge; (9) Illustrations of complex motives. ρ

Elias Artista Redivivus oder das Buch vom Salz und Raum. Von *Dr. med. Ferdinand Maack.* Berlin: Barsdorf, 1913. Pp. 198. Price 5 m., bound, 6.50 m.

Former numbers of the "Secret Science" series (*Geheime Wissenschaften*) which offers a collection of ancient and modern writings on alchemy, magic, Cabala, Rosicrucians, freemasonry, witchcraft, demonism, etc., have been exclusively concerned with the literature of antiquity, but the present volume attempts a synthesis between the old science and the new. This "Book of Salt and Space" (of alchemy and chemistry) presents a vast variety and mass of the most interesting material of early and later date and arrives at the most surprising results, among which are the comparative researches for a panacea which under the name "pantatropin" the author tries to assimilate to modern needs, and the studies in space to which he adapts his own construction of a cosmic "space chess" (*Raumschach*). The author claims to represent a strictly mechanistic standpoint, but by regarding his mechanistic conception as "allomatic" in distinction to "automatic" comes closely into touch with the most mystical problems. It will prove an interesting task to many people to discover for themselves how successfully Dr. Maack with his mystical predisposition and his strictly scientific training accomplishes the synthesis he has undertaken. ρ

A *History of Japanese Mathematics* by David Eugene Smith of Columbia University and Yoshio Mikami of Tokyo, has been completed and will be ready for the market in a short time. It will have an interest not only for mathematicians but for the general public on account of the many quaint modes of Japanese thought. It is very fully illustrated, and may be ordered directly from the publishers, The Open Court Publishing Company of Chicago. κ

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