

THURSDAY, AUGUST 13, 1891.

THE INTERNATIONAL CONGRESS OF  
HYGIENE AND DEMOGRAPHY.

THIS Congress, the work of which we refer to in another column, which is now in full swing, promises to be one of the most important meetings of the kind that has ever been held, not only in point of numbers, but also on account of the far-reaching results likely to accrue from it.

A remarkable combination of circumstances has contributed to its success. In the first place, it is held in the country which has been the pioneer of sanitary work; and then it has the patronage of Her Majesty the Queen, who, it is well known, takes a deep personal interest in its success; and has as its President, not merely in an honorary sense, His Royal Highness the Prince of Wales, who presided and gave an admirable address of welcome at the splendid opening meeting on Monday in St. James's Hall.

This is the seventh of a series of similar Congresses which have been held in various parts of Europe, and one is tempted to ask what they have accomplished. An answer is at once forthcoming. The all-important question of quarantine has been discussed at several of these Congresses. Not to go farther back than the Congress at The Hague, held in 1884, we find, from the excellent reports issued by the editors of the *Lancet*, that then the feeling in Europe was so strongly opposed to the English views as to the inutility of quarantine and the superiority of our method of medical inspection, that the English delegate was not even allowed to explain the English position in the matter, but the discussion was peremptorily closed, on the ground that the subject had been sufficiently discussed on the previous day. At the Vienna Congress, in 1887, quarantine was again discussed under the subject of cholera; and the veteran Pettenkoffer told the members of various countries present that they had only to follow the example of England, in looking after their systems of water-supply and sewerage, and in isolating cases of infectious disease, and they would be no more afraid of cholera than the English were, even with their continual communication with India, the home of that disease, and would have no need of quarantine, with all its vexatious and ineffective restrictions, and all its unnecessary interference with commerce. Now, Continental opinion is almost entirely on our side, and it is doubtful whether there will be any serious discussion on the matter.

But there are many other subjects with which the Congress will interest itself, and about which such an interchange of views as can only be obtained at an International Congress must be of the greatest benefit. The whole subject of bacteriology has grown up within the last few years, and one of the most important and best attended Sections of the Congress is devoted to it, many of the highest authorities on this subject having been attracted here to take part in the discussion under the presidency of Sir Joseph Lister. The abnormal prevalence of diphtheria, not only in our own large towns,

but also in those of other parts of Europe and in America, in many cities of which, especially in the Western States of North America, it has become a veritable plague, is likely to occasion an important discussion in Section I., under the presidency of Sir Joseph Fayrer. The mention of his name leads us to observe that India is well to the front in this Congress, for not only have a number of delegates been sent by her Provinces and Native States, but they have also largely contributed to the funds of the Congress.

Influenza, too, our new plague, about which we seem to know so little, might be discussed, as to its mode of spread and methods of prevention, with great advantage at a meeting where so much experience from all parts of the world is focussed.

An especial feature in this Congress is, as might be expected in England, the prominence which is given to engineering and architecture in connection with hygiene, there being two separate Sections devoted to these branches of the subject.

The division of demography, too, which has been so much talked about on account of its name, which was up to the present time unfamiliar to English ears, and which has been defined by some wag as "the art of drawing the public," has attracted, under the presidency of Mr. Francis Galton, many of the most eminent statisticians of Europe, whose discussions cannot fail to promote the attainment of more uniformity in the methods of statistical inquiries.

This is an age of Congresses, and if they are, as it is universally agreed that they are, of any use at all, it is self-evident that the most useful and the most important are the international ones.

## A LIFE OF DARWIN.

*Charles Darwin: His Life and Work.* By Charles Frederick Holder. (New York and London: G. P. Putnam's Sons, 1891.)

BETWEEN the voluminous "Life and Letters" of his father, by Prof. Francis Darwin, and the brief epitome of Darwin's work, by Mr. G. T. Bettany, published in 1887 in the "Great Writers" series, there has hitherto been a gap which has only been partially filled by such books as Grant Allen's "Charles Darwin" in the series of "English Worthies." In the first of the works mentioned, our great naturalist is chiefly allowed to speak for himself, while in the second we have a digest of his scientific achievements. Although it has been generally considered that the life of Darwin from the time of the return of the *Beagle* was too uneventful to make an interesting biography, we have always been of opinion that there existed sufficient material for a popular "Life" of the very greatest interest provided that this material could be skilfully and judiciously worked up. The work under notice supplies this want, and American and English readers are now provided with a biography which is both entertaining and accurate.

Of course the material out of which Mr. Holder has woven his story is for the most part to be found in Darwin's own writings, or in the "Life and Letters," and readers who turn to the pages of this book with the hope of finding new matter may be disappointed. But the very circumstance that out of the familiar records of the

voyage of the *Beagle*, and the later writings of Darwin, the author has been enabled to construct such a very readable volume, is the best tribute to his skill.

The task which Mr. Holder took up was by no means an easy one; the difficulty which he had to confront did not arise from paucity of material, but from a superabundance of records, owing to the very complete account of his own travels and observations which Darwin has bequeathed to us. To extract the salient points from these records, and to dress them up in the writer's own language, was a labour requiring considerable literary ability. Mr. Holder has shown that he was well qualified for the undertaking, and it is refreshing—after the "Summary of the Darwinian Theory," and similar productions to which we have recently been treated in this country—to find that an American naturalist is able to write an account of Darwin and his work in language expressing his own ideas on the subject, instead of stringing together a lot of disconnected quotations from Darwin's writings. Not the least praiseworthy feature of the book is the comparatively small number of extracts from the writings of his hero; the author is wise enough to recognize the fact that most reading naturalists may be supposed to be familiar with the text of the "Naturalist's Voyage," the "Origin of Species," and other Darwinian classics.

The present volume is one of the "Leaders in Science" series, published by the firm of Putnam's Sons. The author says in the preface:—

"When the publishers proposed to me the subject of the present volume, a life of Charles Darwin for American and English readers, I was particularly gratified with the suggestion that the work should be adapted to young readers as well as old. It has always seemed to me that the life of Charles Darwin was one eminently fitted to be held up as an example to the youth of all lands. He stood as the central figure in the field of natural science in this century, and while it is yet too early to present his life with any approximation of its results upon the thought of the future, it is apparent to everyone that his influence upon the intellectual growth of the country, and upon biological science in particular, has been marked and epoch-making.

"In the preparation of the work I have not attempted an analytical dissertation upon Darwin's life-work, neither have I discussed his theories or their possible effect upon the scientific world, but have simply presented the story of his life, that of one of the greatest naturalists of the age; a life of singular purity; the life of a man who, in loftiness of purpose and the accomplishment of grand results, was the centre of observation in his time; revered and honoured, yet maligned and attacked as few have been."

Having thus defined his object, the author proceeds to narrate his story, beginning with the boy Darwin, passing on to his Cambridge career, and then leading us through the scenes of his wanderings as naturalist to the *Beagle*. The major portion of the volume (twelve out of the twenty chapters) is thus pleasantly filled up; all the little personal incidents which give colour to the individuality of the man are skilfully brought in, and here and there the author interposes observations of his own which help to throw light on the questions discussed and the facts recorded by Darwin. Having in view the taste of his younger readers, a number of full-page illustrations have been introduced, some being reproduced from

Spry's "Voyage of the *Challenger*," others from Gosse's "Romance of Natural History," others from Brehm's "Natural History," from Figuier's works, and from the *Century Magazine*. Many of the illustrations are new, the frontispiece, representing Darwin in his garden with the squirrels running up him, being well worthy of notice.

The working period of Darwin's life from the return of the *Beagle* to his death is dealt with in three chapters, in the course of which the author relates the history of the "Origin of Species," and the impetus given to the publication of that work by the independent discovery of the principle of natural selection by "Alfred Russel Wallace, a young Welsh naturalist, who was then travelling in the Malay country." This incident is of course familiar to all, but as an old story retold by a transatlantic admirer of Darwin it reads even now with the charm of freshness. The later works are referred to in chronological order, and in a succeeding chapter we have a catalogue of the honours conferred upon Darwin during his life. The seventeenth chapter contains an account of the Darwin family, beginning with William Darwin, of Marton, near Gainsborough, in 1500, and concluding with Erasmus, elder brother of Charles Darwin, the friend of Carlyle, who was described by the latter in his "Reminiscences," and whose amiable character was more fully portrayed by Miss Julia Wedgwood in the *Spectator* in 1881. The latter description from the pen of Miss Wedgwood is given by Mr. Holder *in extenso*.

The narrative, as such, ends with the death of Darwin in 1882, and the reader will turn with renewed interest to the eighteenth and nineteenth chapters, containing Mr. Holder's account of the Darwinian theory. The principles of this theory are fairly well expounded, considering the small amount of space which has been devoted to them. Natural selection is illustrated by a happily chosen and original example from the animal kingdom, viz. the adaptive coloration of the fauna of the Sargasso Sea. Another illustration of the principle is drawn from the vegetable world, viz. the evolution of a hairy seed adapted for aerial transport. The questions of geological time and the palæontological evidences of organic evolution are also touched upon, and here we think the author might have used more judgment. The formation of the chalk, for example, is not quite satisfactorily given, and the statement that the chalk cliffs of Dover have been elevated "by some convulsion of nature" (p. 185) will jar upon the geological susceptibilities of his readers. In a work intended for popular reading it would also have been safer to avoid any estimate of the time required for the denudation of the Weald, the more especially as Darwin himself admitted the unsoundness of such estimates by omitting this section in the later editions of the "Origin." The ancestry of the horse, and Prof. Marsh's discovery of the *Odontornithes*, are well brought in in connection with the palæontological evidence. We may point out in passing that the diagram illustrating the evolution of the horse, which fronts p. 62, is referred to both on pp. 189 and 190 as "the accompanying diagram," which is obviously an oversight.

In tracing the history of pre-Darwinian evolution, the author mentions the views of Bonnet, the doctrines of

Thales and Anaxagoras, the speculations of Leibnitz, De Maillet, Wright, Lambert, Herschel, and La Place. Of Buffon he says :—

"Buffon was the naturalist of the day in the time of Louis XV. and Louis XVI.,—a period somewhat famous for the restrictions which were placed upon men, and the denunciations with which new and advanced ideas were received. Thus advanced thinkers found that their theories in many instances, instead of leading them on to fame, but opened the doors of the Bastille.

"It is not improbable that Buffon was in accord with the feeling of the time, as while his great discursive work—'Histoire Naturelle,' of 1749–88—fully outlines the theory of evolution, in which he was a believer, it is done in an ironical, partly satirical manner, so that he could, if attacked, retreat by claiming that it was a satire on the advanced scientific thought of the time; . . . he was ready to believe that from a single unit in the beginning might have descended all the various forms of existing animal and plant life. It is curious to note that this pioneer evolutionist suddenly corrects himself and says: 'But no; it is certain from revelation that every species was directly created by a separate fiat.' We may suspect that this secession from a position so broadly taken was forced upon the evolutionist. Perhaps the clergy gave him close and suggestive attention, and he was offered the choice between the Bastille, the Sorbonne, and apology to offended orthodoxy. Be this as it may, Buffon was one of the early delineators of the modern theory of evolution, and despite his peculiar attitude, history accords him this recognition."

The works of Wolff, of Goethe, Geoffroy St. Hilaire Oken, Pander, Von Baer, Schleiden and Schwann, Von Mohl and Max Schultze, Lord Monboddo and Erasmus Darwin, are all referred to in due order; and a well-bestowed paragraph of praise is given to Lamarck. Later writers, such as Robert Chambers, Von Humboldt, Owen, Asa Gray, Herbert Spencer, and Youmans, bring us down to the birth of modern Darwinism.

To English readers the last (twentieth, but erroneously headed eighteenth) chapter will be one of the most interesting. It is entitled "The Darwin Memorial," and contains a series of addresses by American men of science, delivered at a special memorial meeting of the Biological Society of Washington soon after the death of the illustrious naturalist in 1882. The address of Dr. Theodore Gill, of the Smithsonian Institution, is a masterpiece of eloquence, treating of "The Doctrine of Darwin," and contrasting the doctrines of special creation and evolution. The address by William Dall, of the United States National Museum, is equally eloquent, and treats of Darwin in the form of a biographical sketch. Dr. John Powell, the Director of the United States Geological Survey, follows with an admirable address on "Darwin's Contributions to Philosophy." We cannot refrain from transcribing some of his remarks :—

"But Darwin's investigations have not ended research or completed philosophy. He brought scientific men to the frontiers of truth, and showed them a path across the border. Yet more than this he did. He pointed out one of the fundamental methods of research. Before his time philosophers talked about deductive methods and inductive methods. Darwin has taught us that both are fruitless. . . . By inductive methods, men are to collect facts, unbiased by opinions or preconceived theories. They are to gather the facts, put them together, arrange and combine them to find higher and still higher generalizations. But there are facts and facts—facts with

value, and facts without value. The indiscriminate gathering of facts leads to no important discoveries. Men might devote themselves to counting the leaves on the trees, the blades of grass in the meadows, the grains of sand on the sea-shore; they might weigh each one and measure each one, and go on collecting such facts until libraries were filled and the minds of men buried under their weight, and no addition would be made to philosophy thereby. There must be some method of selecting, some method of determining what facts are valuable and what facts are trivial. The fool *collects* facts; the wise man *selects* them. Amid the multiplicity of facts in the universe, how does the wise man choose for his use? The true scientific man walks not at random through the world, making notes of what he sees; he chooses some narrow field of investigation; . . . his investigations are always suggested by some hypothesis—some supposition of what he may discover. He may find that his hypothesis is wrong, and discover something else; but without an hypothesis he discovers nothing. . . . Working hypotheses are the instruments with which scientific men select facts. By them, reason and imagination are conjoined, and all the powers of the mind employed in research."

The succeeding address, by Dr. C. V. Riley, gives an account of Darwin's entomological work, and comprises a graphic description of the naturalist in his home, drawn from personal reminiscences of a visit to Down. Dr. Lester Ward follows with his address on "Darwin as a Botanist," in the course of which he discusses, among other points, the bearing of Darwin's researches on the power of movement in plants on the great question wrapped up in the expression "tendency to vary." Dr. Frank Baker contributes the next address, on the expression of the emotions, and in this we again meet with a spirited advocacy of the Darwinian method :—

"But not as a fact-gatherer do we find him greatest. Many others have struggled with ant-like toil to amass piles of facts, which, like the ant-heap, remain but and after all. Darwin brings to his work an informing spirit, the genius of scientific hypothesis. Breathed upon by this spirit, the dry bones of fact come together 'bone to his bone,' the sinews and the flesh come upon them, they become alive and stand upon their feet, 'an exceeding great army.' He searches always for the principles which underlie the facts and make them possible, realizing that the *phenomena*, the things which are seen, are temporal and transitory; the things which are not seen, the cosmical forces which govern and control, are eternal."

A Darwinian bibliography, by Frederick W. True, the Librarian of the United States National Museum, and an appendix giving a list of Darwin's works, conclude a volume of which enough has been said to commend it to all readers, whether youthful or adult, and which we on this side of the Atlantic cannot but appreciate as a most inspiring picture of the life and work of the man who, of all others, has helped to emblazon our country's fame on the scientific scroll of the nineteenth century.

R. MELDOLA.

#### PINES AND FIRS OF JAPAN.

*Monographie der Abietineen des Japanischen Reiches.*  
Bearbeitet von Dr. Heinrich Mayr. Mit 7 Colorirten Tafeln. (Munchen: M. Niegler'sche Universitäts Buchhandlung, 1890.)

FROM the time of Kaempfer and that of Thunberg to our own day, the Japanese Conifers have been the objects of special predilection on the part of botanists.