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We notice that the "History of Creation," by Prof. Huxley (London: H. S. King & Co.), although well translated, and edited by Prof. Ray Lankester, has somewhat disappointed us. It is an important book, and, to a great extent, one that will make its mark. It will be largely read by all naturalists, but few will concede the points so tersely and healthily raised by the author. It is a history of creation from an extremely rationalistic point of view, and is crowded with facts which, it seems to us, can only be explained on that theory. The author is a remarkable man, and anything from his pen will have great weight. But the philosophical discussion of the weighty questions involved, in the history of creation is spoiled by an anti-theological spirit, which breaths both here and there in a degree which is contrary to every sense of good taste. If the author chooses to originate a creation without a creator, we had as well ask a question of theory, although we must confess that it seems very contradictory for a man to use his own high intellect in discovering natural laws, and then to have found and declare such laws could originate without Intelligence! If readers will compare the inter-pretive tone of Huxley's work with the philosophical reverence of Herbert Spencer's "First Principles," they will see that the doctrine of evolution, instead of, detracting from a First Cause, clears it of its

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"Zoology for Students," by Dr. Carter Blake (London: Eddly & Isherton), is, in many respects, a long way behind the time. Although professed by a thoughtful man from the pen of Professor Green (which we fail to see has anything to do with Dr. Carter Blake's work), it does not, by any means come up to the standard now required in an advanced zoological examination. We cannot understand a naturalist writing a text-book in which the sub-kingdom Radiata is still maintained, as in this book it is. Moreover, Dr. Blake makes the Radiata include Polypa, as well as Actinians and Echinodermata!

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Messrs. Lockwood & Co. have issued a new edition of that most valuable compendium of ornithological and geological information to students, Woodward's "Manual of the Mollusca," with an illustrated appendix by Professor Ralph Tate. We are glad of this, for the last edition did not do its original author justice, and no man is better able to edit the work and to bring the subject-matter up to the most recent discoveries than Mr.



A GOSSIP ABOUT NEW BOOKS.



RESSURE of valuable literary material has prevented our noticing many scientific books published during the latter part of last year. Rarely have we had more valuable contributions to natural science in such a short space of time. Darwin's long-looked for work on "Insectivorous Plants" (London: John Murray) showed us, happily, that the keen and careful research of its author has not yet shown any signs of giving way, nor have his powers of philosophical generalization been weakened. In this

volume, of nearly 500 pages, we have a series of experiments on the so-called "carnivorous" plants, and many of the results seem ludicrous when regarded from the old notion of how a plant ought to behave. Indeed, we are learning every day how arbitrary is our old classification, and how little we have hitherto actually known about organic objects. We need no longer point to the lowest forms of animal and vegetable life as the platform where both meet; these "carnivorous" plants behave as animals also, when it is to their advantage to do so. In calm and philosophical language, and yet in a style so admirably suited to the novel facts and their meanings that the reader willingly gives himself up to the subtle charm of the book, Mr. Darwin discourses on the sundews and the movement of their "tentacles," as he calls the red hairs on the leaves; on Venus's Fly-trap (*Dionea muscipula*), and the irritation of its filaments; on *Aldrovanda vesiculosa*, a plant which captures crustaceans; on the various species of

Butterwort (*Pinguicula*) and Bladderwort (*Utricularia*); as well as of other plants, such as *Drosera phyllum*, *Roridula*, *Byblis*, &c., which affect "insectivorous" habits. From experiments made on these various plants (all of which are related in the volume before us), there can be no question as to their digestive powers, and their capability of assimilating nitrogenous food. Not long after the appearance of "Insectivorous Plants" the reading world was surprised by another work on "The Movement and Habits of Climbing Plants," by Mr. Darwin (London: John Murray). Such accurate industry has rarely been equalled, and never surpassed. In this latter volume we have those phenomena of the dissipation of motion exemplified by numerous climbing plants, which seem almost to partake of intelligence or instinct. Leaf-climbers, tendril-bearers, and hook and root climbing-plants of all kinds are minutely described; the experiments made by Mr. Darwin upon them almost convincing us that the force of habit in certain of them is nearly analogous to instinct. This book contains more than 200 pages, and in lively interest is equal to that on Insectivorous Plants. Had only these two volumes appeared last year, they would have left their mark on our scientific literature. And there can be no doubt whatever they will largely influence the spread of the doctrine of evolution, which alone among extant theories is able to account for those singular phenomena in plants which form the subject-matter of these two treatises.

In Geology and Physical Geography it is some time since there appeared a work of such importance as "Climate and Time," by James Croll (London: Daldy, Isbister, & Co.). Mr. Croll's theories as to the origin of the Glacial Period by astronomical causes have long been held in high estimation by our best geologists. In this large volume we have the whole subject worked out in its geological relations, and a theory of the secular changes of the earth's climate elaborated in the completest manner. No geologist of any pretension can afford to do otherwise than make himself thoroughly

familiar with this remarkable book. As the author endeavours to account for those evident extremes of tropical and arctic conditions which the same areas seem to have experienced in various of the geological periods, both from the laws of the diffusion of heat by currents, and by the varying positions of the earth and the sun, we have various chapters devoted to a closely-reasoned out description of them. Those on ocean currents in relation to the distribution of heat over the globe, are masterly expositions. After dwelling in detail upon all the cosmical and solar and terrestrial conditions which can possibly affect climates, there follow a series of chapters in which evidence is produced of warm inter-glacial periods in that to which geologists have given the special name. All the causes which could produce both extremes are described, as well as the origin of the submergences and elevations which we know then succeeded each other. The volume concludes with two chapters on Glacier Motion. From this brief outline of the contents, our readers will perceive that Mr. Croll's work is of a most exhaustive character. This and the work of Mr. James Geikie, on the "Great Ice Age," will do more to finally settle the cause of the Glacial Period than anything which has before been written. Mr. Croll's book is written in that terse and unadorned language which convinces us a man is in earnest; and we expect it will long continue to be a work of authoritative reference for the mass of questions which it discusses.

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Tate. This edition, therefore, is one to be especially sought after by all those who wish to study recent and fossil shells. Principal Dawson's "Dawn of Life" (London: Hodder & Stoughton) is an exhaustive but popular treatise on his favourite fossil the *Eozoon*. All the arguments in favour of the foraminiferal nature of this doubtful fossil are marshalled in logical and telling order, varied with a few backhanded blows at evolution. Nevertheless, it is a book which the geological student will read with pleasure and profit, and is undoubtedly a valuable contribution to the literature of geology.

Professor Mivart's "Lessons from Nature" (London: John Murray) will interest a good many people in various ways. It will show them how an eminent naturalist, not averse to the doctrine of evolution, and a Catholic, regards the advanced scientific doctrines of the present day. Although this volume has been already before the public in another form, we thank both author and publisher for giving it to us again in this completer and more attractive style. Dr. Mivart attacks the vague and misleading appeals to Nature so constantly made by many scientific men; and, leaving the defensive, also breaks a lance against the *Autanthropomorphism* of many writers. In the essays which now form the chapters of this book, the reader will find the theories of Spencer, Bain, Lewes, Huxley, Darwin, Wallace, Galton, Lubbock, Tyler, ably combated, although somewhat Socratically, and will not be surprised, after Cardinal Manning's recent argument that the Romish Church has always been "the true exponent of science and morals," to find Professor Mivart supporting him at the close of his book by declaring that "a prescience has watched over the Church's definitions, and that she has been so *guided* (the italics are the author's) in her teaching as to be able to harmonize and assimilate with her doctrines the most modern theories of physical science."

"A Short History of Natural Science," by Miss Arabella B. Buckley (London: John Murray), gives us an account of the progress of scientific discovery from the time of the Greeks to the present day. It is well and intelligently written, and will prove very serviceable to others than the "young and unscientific people," for whom the author modestly states she has written it. The book contains nearly five hundred pages, and is an acceptable and useful contribution to our libraries. "Our Place among the Infinities" (London: H. S. King & Co.) is from the facile pen of R. A. Proctor. Our readers will therefore expect them to be thoughtful and attractive. The book is a series of essays, contrasting our little abode in space with the infinities around us. The chapters on the "Past and Future of our Earth," and a "New Theory of Life in other Worlds," are especially interesting. "The Origin of the Stars," by Professor Ennis (London:

Trübner & Co.), is a rather high-sounding treatise on the evolution of the stellar universe, and will be read with great interest and delight by all astronomical students. This is the first English edition, its success in the United States having been very great. "Time and Time-tellers," by James W. Benson (London: Hardwicke), is an exceedingly well got-up little volume, amply illustrated, on all kinds of watches and clocks, ancient and modern, and is an interesting treatise on all relating to these useful articles, well written, and sparkling with well-told anecdotes. "A Month in Mayo," by George Rooper (London: Hardwicke), contains some lively characteristic sketches, sporting and social, of Irish life. The author is a thorough and well-known adventurous sportsman, and he is one of the few who are good naturalists as well, with a keen eye for the many traits of animal life which a sporting naturalist has so many opportunities of observing. Mr. Rooper has made good use of his opportunities, and his style is so attractive and cheery that we are bound to finish the book if we begin the first chapter. "The Universe," by Dr. F. A. Pouchet (London: Blackie & Sons), is the third edition of a well-written and popular account of "the Infinitely Little," gorgeously illustrated and bound, so as to form a most charming gift-book. Of the contents enough has already been said. In few places are the author's facts to be trusted, although we are glad to see that many glaring errors which appeared in the first edition have been corrected in this. Still, we must regard a book from the point at which the author wrote it, and, as he states in his preface, that he never intended this to be a learned treatise, we are bound to believe him. We are not sure whether these books and those of Figuier have done more good than harm in inoculating students with false notions, which require many years and much study to be corrected. "The Canary Book," by Robert L. Wallace (London: the Country office), is, on the other hand, an unpretentious but thoroughly useful little volume, on the most charming of our domestic pets. It contains full directions for the breeding, rearing, and management of exhibition canaries and canary mules; their treatment in health and disease, together with a full description of all the different varieties of canaries, and their various points of excellence. The illustrations are excellent, and the whole tone of the little book is marked by the earnestness of an enthusiast.

Few modern books of travel have made such a name as the "Abode of Snow," by A. Wilson (Edinburgh: W. Blackwood & Sons). Although originally written for *Blackwood*, and then republished in a well got-up volume, the first edition of the latter was out of print in a few weeks, and a copy of the second is now before us. A more readable book we have rarely met with. The author

has a vigorous style, and such a keen eye for natural phenomena, especially of a geological and physical geographical character, that his delineations are graphically impressed on the reader's mind. And when we remember that the country thus delineated is the Himalayan mountains to the table-land of Thibet, those who have not read this book will understand how thoroughly interesting it must be. Travellers like Mr. Wilson do more than simply interest us; they contribute materially to natural science by so vividly describing natural scenery which few can ever behold. We heartily commend this volume to our readers.

A great many books have been issued since the Arctic expedition left England concerning the countries it has gone to explore. None of them, however, come up to "The Arctic World," published by T. Nelson & Sons, London. It is a large quarto volume, charmingly bound in crimson and gold, and profusely illustrated by some of the best full-page and other woodcuts we have seen since those of Wolf. The letterpress is of a large type, and agreeable to the eyes; and the matter is well written, although the chief Arctic travellers are largely laid under contribution. The plants, animals, and natural phenomena of the Arctic regions are described and figured in a very truthful style. Those who cannot go to these high latitudes must do the next best thing—get this attractive work.

THE MICROSCOPE AND MICROSCOPIC WORK.

No. III.—By F. KITTON.

IN our last paper we gave a short *résumé* of some of Leeuwenhoek's labours with the microscope. In the present paper we propose to continue our sketch of his studies with that instrument. Space will not allow of more than short excerpts, and these we shall make from the essays on the Spider and Silkworm, as being the most interesting. Those of our readers who have paid any attention to the former animals will, perhaps, be somewhat surprised that he overlooked those very extraordinary organs the male palpi. With this exception Leeuwenhoek seems to have had a very fair acquaintance with the structure of this "animal." He says:—"I have often seen the spiders, when dropping or falling, as it seemed, from a tree, stop or support themselves in midway by the help of one of their hind feet, which they continually apply to the thread as they open it. These feet are each of them furnished with three nails or claws, standing separate or apart from each other. Two of these claws are at the extremity of the foot, and each of them is formed with teeth, or notched like the cuts in a saw, growing narrower towards the bottom; and with these they are enabled to hold fast the thread, in

like manner as the pulley or wheel used by clock-makers in their thirty-hour clocks is contrived to lay hold of the clock-line by means of the groove being also narrow at bottom. For the more perfectly understanding this formation, I caused the following figure to be drawn."

The illustration is very good, and although not quite accurate, gives a good idea of what we now call the "combs." The general accuracy of Leeuwenhoek's figures is the more surprising, as he does not seem ever to have prepared them in any way; and doubtless the use of caustic potash, &c., for the purpose of bleaching, was entirely unknown to him.

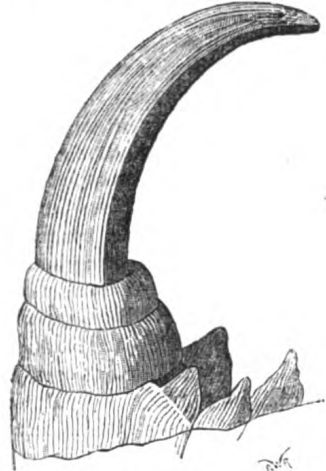


Fig. 25. Claw of Spider (from Leeuwenhoek).

These instruments are now supposed to be used for the purpose of cleaning the web, but no doubt they serve for both purposes.

To Leeuwenhoek belongs the credit of the discovery of the poison-fangs of the spider. The existence of these organs as the means of conveying a poison was questioned as recently as 1867, when several correspondents of SCIENCE-GOSSIP argued for and against their existence. Mr. R. Beck, in a paper on this subject, remarks that Leeuwenhoek had discovered the nature of the fangs, and gives a copy of his figure, which we here reproduce. As Leeuwenhoek's observations are of considerable interest, I transcribe them:—"I have often heard it said that the spider has a sting, with which it is also reported it can kill a toad; but no one could tell me in what part of the body this sting was placed; therefore I concluded that, if there was one, it must be in the posterior or hind part, as in other animals and insects; but on examination I found this opinion to be groundless. The spider is, however, provided with two organs or weapons answering every purpose of a sting, which are placed in front of the head, just below the eyes, and, when not in use, they lie between the two shorter feet. These weapons, or instruments of offence,