tainly *sol*, below. Not only is Company A's note more unisonal and definite, but it is firmer, more accented, and it seems to me that more insects join in this note than in the second. Careful observation has convinced me that no insect of Company A or Company B ever joins in the other company's note. The rhythm is usually perfect unless there is a disturbance by a breeze. A sharp gust upsets the whole orchestra and confusion results, but the measured beat is soon refound. In the instants of confusion one can detect the steady see-saw of certain ones, as it were, 'leaders,' or 'first violinists,' who hold the time-measure despite the wind, and who soon draw the lost notes of the others once more into the regular measure or beat. I do not mean to say that by diligent attention one may not at times detect individuals sawing out of time, stray fellows that are indifferent or careless, but the vast majority usually even seemingly without a single exception, if there is no wind or rain, thus swing along hour after hour in perfect time. I have counted the beats several times and find the number is always identical, 34 double beats or 68 single ones in 60 seconds. The effect of the rhythm upon the mind is not unlike that of the woodsman's crosscut saw handled by two steady, tireless pairs of hands, although the Katydids give a larger volume of sound and the *timbre* is harsher. The queries arise: Is Company A composed of males and Company B of females? What function does the orchestration subserve? Is there anything comparable to it among other animals?

Sincerely yours,

GEORGE M. GOULD.

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SCIENTIFIC LITERATURE.

A Text-Book of Physiology by M. FOSTER, M. A., M. D., LL. D., F. R. S. Professor of Physiology in the University of Cambridge and Fellow of Trinity College, Cambridge. Revised and abridged from the author's text-book of physiology in five volumes. New York, Macmillan & Co. 1895.

We remember the third edition of Dr. Foster's celebrated text-book with gratitude and affection. It was different from other books then in common use. This book had style to begin with; and style is a rare quality in such writings. It had an air of being at the center of things. There was a certain glow of enthusiasm in its pages, breaking through at times what seemed the habitual restraint of a scholar who was also a man of the world. Such moments were very welcome. Not less welcome were the brief accounts of celebrated controversies. How we venerated the name of Ludwig! What high resolves were stirred by the triumphs of Bernard, Heidenhain, Marey and Du Bois-Reymond! How amazingly clever were Goltz and Gaule to have thought of measuring the pressure in the heart with a minimum valve! These were not merely the easily excited reactions of impressionable youth. Fourteen years have passed since those delightful days and have but strengthened our belief that this was a most stimulating and helpful book.

The first, second and third editions were much alike. They set forth 'that which is fixed and sure, without too much display or too much neglect of that which is uncertain and loose.' They introduced in smaller type discussions on debated points. The fourth edition and its successors differ from the earlier volumes. The discussions on debated points are either left out or much abridged or are transformed by the omission of the references to original sources. In the preface to the fourth edition Dr. Foster explained that his decision to do away with the small print portions of former editions had been largely determined by the fact that this former pupils, now his colleagues at Cambridge, had undertaken to join with him in treating these higher or advanced parts of physiology in a more extended and satisfactory form. The hope that the result of their labors would soon appear led him to omit all references and to use as little as possible the personal authority of the names of investigators. "The fondness of students for the use of names of persons is as marked as the pertinacity with which they use them wrongly."

The hope which the author here expressed is fulfilled in the fifth edition, in which Dr. Gaskell, Mr. Langley and Dr. Lea have given great assistance. The result is a work of about two thousand pages in five volumes. Part I. treats of the blood, the contractile tissues and the vas-

cular mechanism; Part II., of the tissues, of chemical action with their respective mechanisms and of nutrition; Part III., of the central nervous system and its instruments; Part IV., of the senses and some special muscular mechanisms and of the tissues and mechanisms of reproduction; and Part V., the appendix, of the chemical basis of the animal body.

The abridged edition recently issued is in one volume of about twelve hundred pages. The abridgment, we are told in the preface, has been effected by omitting all the histological matter, and all discussions of a too theoretical nature. The appendix is also omitted. Otherwise, beyond such changes as the advance of science seems to call for, the text which is left is the same as in the full edition.

In forming an opinion about a text-book, two questions must be answered: first, whether the plan on which the book is made is the best possible plan; second, whether the workmanship is good. The second question we may dismiss at once. The work is admirably done. Experience and painstaking are seen in every page. About the plan we cannot be so sure. A text-book of physiology should form and develop scientific habits of thought, make clear the danger as well as the suggestive value of hypotheses, harden the student against the shock of controversy by teaching the value of evidence and especially the criticism of method, and in short create a state of mind. If this be the aim, facts will take care of themselves. They are relatively unimportant. The trained student retains many of the facts which have been the raw material of his training and can easily get more. The untrained is merely encumbered by information. These principles are fundamental, yet how seldom are they practically applied. Many a widely sold text-book of physiology is a weak encyclopædia, a medley of facts. Dr. Foster's book is not of this sort. Its chief excellence is that it strives to develop as well as to inform the mind.

It may be questioned whether the recent editions serve this purpose as well as the third edition. The omission of references to original sources, the lack of historical account and the repression of controversy do not strengthen the book, while the more extended treatment for the sake of which chiefly these things have been done threatens to be too much for the undergraduate and is certainly too little for the advanced student. We loved the third edition for its personal quality. We find the fifth impersonal, less vivid, remote. The history of a few of the more famous discoveries in physiology, the rise of a few famous doctrines, the fall of others, the general outlines of one or more of the controversies of the day, are, in our opinion, indispensable to the correct rendering of that subtle atmosphere which is the very spirit of the science. Much of this there already is, but its force is weakened by the absence of personal reference. The facts of physiology, particularly recent facts, are seldom altogether separated from the personality of their discoverer, and they cannot be wholly divorced without breaking a sympathetic link, a human interest, highly valuable as an intellectual condiment. An impersonal statement of the records secured by the self-registering apparatus of a captive balloon is less interesting to the ordinary student than the observations made at a great height by the aeronaut himself.

However, this may be, there is no gainsaying the general opinion that Dr. Foster's work is the most satisfactory yet written. Wide knowledge, a fine sympathy, the gift of style and a delicate sense of balance are necessary to the making of such a book.

W. T. PORTER.
HARVARD UNIVERSITY.

North American Birds: By H. NEHRLING. 4°, part XII., Sept. 1895, pp. 145–192, pls. 22 and 23. Published by Geo. Brumder, Milwaukee, Wis.

The twelfth part of the American edition—for there is a German edition also—of this excellent work has been delivered to subscribers. It contains two colored plates—one a superb picture of the Black-breasted Rosy Finch (*Leucoaticte atrata*) from the brush of Robert Ridgway; the other a conglomeration of sparrows by Mützel.

The text deals with the sparrows and finches and includes some of the commonest and best known of American birds—as the Long Sparrow—and also some of the rarest species—as Abert's Tomhel. The accounts of some of the