Prof. Salvadori for the admirable way in which he has commenced his laborious task, and to express our hope that he may bring it to a successful conclusion. In Mr. Gould's great work on the "Birds of New Guinea" we have a series of magnificent illustrations of all the more remarkable forms of Papuan ornithology. Such a work as that of Prof. Salvadori's was much wanted in order to perfect our knowledge of the history and literature of this attractive subject.

OUR BOOK SHELF

An Elementary Treatise on the Integral Calculus, containing Applications to Plane Curves and Surfaces; with numerous Examples. By B. Williamson, F.R.S. (London: Longmans, 1880.)

OF a *third* edition we need only remark that it is a carefully revised issue of the second, and point out the few important additions that have been made. In the discussion of Frullani's theorem (§ 119), a simple shape of the formulæ, due to Mr. E. B. Elliott, is given, and reference made to other articles on multiple definite integrals by the same gentleman (and by Mr. Leudesdorf) in the *Educational Times* (1875) and in the *Proceedings* of the London Mathematical Society, 1876-7. A new article (119*a*) gives a proof of a simple character, by Zolotareff, of the remainder in Lagrange's series. § 147 contains a remarkable extension of Holditch's theorem, due to Mr. Elliott (*Mess. of Math.* February, 1878), and § 147*a* gives the "singularly elegant" theorem discussed by Mr. Kempe (*Mess. of Math.* July, 1878), to which reference is made in Prof. Minchin's letter in NATURE (December 23, 1880), in which he proves these theorems from other considerations. Various insertions of a minor character increase the volume by more than twenty pages. A good feature of the present edition is an index at the end of the work.

Botanisches Centralblatt. Herausgegeben von Dr. O. Uhlworm. Band i., Quart. 1-4. (Cassel: Fischer, 1880.)

WE are now able to record the completion of the first volume of this valuable serial, a monument of extraordinary energy on the part of the editor and his band of assistants. The aim of the publication is to give an abstract or *résumé* of every important contribution to botanical science published in the scientific serials of the Continent of Europe, Great Britain, and America; and, as far as we have been able to judge, the undertaking has been carried out with great judgment and completeness. Original works are also not neglected. Appearing much more promptly than Just's "Jahrbücher," the "Centralblatt" is indispensable to any one who desires to keep abreast of any department of botanical science.

Botany for Children: an Illustrated Elementary Text-Book for Junior Classes and Young Children. By the Rev. George Henslow, M.A., F.L.S., &c. (London; Edward Stanford, 1880.)

WE do not think that botany can be taught with advantage to children from books. No method of teaching seems so well adapted to the wants of junior students as that of demonstration. A flower pulled to pieces by the student and the parts and their importance intelligently explained by the teacher forms a lesson far more valuable than any to be got from a text-book. With a few such demonstrations from easily-obtained flowers, taken as they present themselves, most of the elementary facts regarding flowering plants can be readily mastered, while the habits of observation and the facility of dissecting thus obtained are invaluable to the student. It is, we fear, too much the habit in teaching botany to make the student prepare a lesson from the text-book as if it were spelling or history. This is really what should be most carefully avoided, although there must be a great temptation to proceed with the book lesson when the plant is not obtainable. Mr. Henslow states in his preface: "The descriptions of flowers in this book are intended to form botanical reading-lessons, specimens of the flowers being at the same time placed in the hands of the pupils, who are required to dissect and examine them carefully, and be sure they see and understand each special part noticed in the text." When used in accordance with the directions laid down by the author, the book seems an excellent one, and calculated to serve its purpose well, although some very important types have been omitted for want of space. As we have known children to work out the structure of flowers for themselves by means of this little book and to enjoy the exercise, we believe the work will be deservedly popular. The illustrations are rather coarse, but on the whole characteristic and often give details of structure sometimes omitted from much larger works.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

Geological Climates

I NOW proceed to justify my statement, which has caused Mr. Wallace great surprise, viz.:—

"It is impossible to suggest any rearrangement of land and water which shall sensibly raise the temperature of the west of Europe, or sensibly depress the temperature of the east of North America."

It is proverbially difficult to prove a negative, and the only way to do so in this case is to show that any given redistribution of land and water is incapable of producing the effects ascribed to it.

I have already shown that Mr. Gardner's proposed redistribution by means of a land connection between Greenland and Europe would fail to benefit the west of Europe. In like manner I shall now demonstrate that Mr. Wallace's redistribution of land and water is quite inadequate to raise the temperature of the west of Europe.

Mr. Wallace's proposal is to introduce two new Gulf Streams into the Arctic Ocean, in addition to the present Gulf Stream.

1. The first of these additional Gulf Streams would be the Kuro-siwo, admitted through a widened Behring's Strait, the effect of which, he estimates, would be *to prevent altogether the formation of ice in the Arctic Sea.*

2. The second additional Gulf Stream is provided by allowing the waters of the Bay of Bengal and of the Arabian Sea an outlet to the north through the Caspian depression into the Arctic Ocean. The effect of this second Gulf Stream, he estimates, would be *to raise the temperature of the Polar ocean from* 15° *F. to* 20° *F. above the freezing point of water.*

This mode of raising the temperature of the Arctic regions, so as to allow of the growth of their Miocene flora, occurred to me when speculating on the former high temperatures of these latitudes, but I rejected it as inadequate to account for the change of climate required for the following reasons. But before giving these reasons I wish to add that Mr. Wallace has given two precise statements involving quantitative results, without giving the numerical grounds on which he made those statements.

The following are the grounds on which I deny the adequacy of Mr. Wallace's causes of change of climate:—

(*a*) *Air and Water.*—Warm winds and cold winds are in themselves of little consequence in influencing climate, except they blow over a large expanse of warm or cold water; they are in fact only heat and cold carriers for the water. The specific heat of water is more than four times that of air, and water is 815 times heavier, bulk for bulk; therefore one cubic mile of water will contain as much heat as 3260 cubic miles of air at the ame