region for the purpose of hunting. I wish now to add that during the past summer Dr. L. B. Sperry, who was with me a year ago, has again visited the region and solved the problem of the glacial water of Avalanche Lake, as described in my former paper. His party discovered in the mountains at the head of Avalanche Basin, a hitherto unknown glacier which will hereafter be known as the Sperry glacier. Like the majority of the glaciers of this region it begins in narrow gorges, high up in the mountains, and spreads out into a hand-like mass terminating near the top of the cliffs above Avalanche Basin. In form it is the exact opposite of the glacier explored by myself. That seems to be unique among those yet discovered in filling a large amphitheatre and in extruding thence by a long narrow tongue much farther down the mountain side than do any of the others.

L. W. Chaney, Jr.

Carleton College,
Northfield, Minnesota.

International Cooperation in Aëronautics.

To the Editor of Science: The excellent article published in your issue of October 9th on an International Association for the Advancement of Science deserves the attention of every friend of scientific progress. If your suggestions are adopted, as they certainly will be, the rivalry between different nations will become beneficial, as the peculiar genius of each will serve to excite mutual emulation.

A good example of what cooperation can accomplish may be found in the proceedings of the International Congress of Meteorology held in Paris during September. I shall confine myself to a brief notice of what has been accomplished by the Committee for Scientific Aëronautics, of which Mr. Lawrence A. Rotch and I are members. It is well known that in 1892 MM. Hersuite and Besançon carried out experiments with balloons and measured the temperature of the air at altitudes exceeding 10,000 meters. By gradually enlarging the diameter of these balloons altitudes exceeding 60,000 m. have been reached and temperatures below 50° C. have been recorded. These experiments published in the *Comptes Rendus* and in *L'Aërophile*, attracted the attention of the Aëronautical Society, of Berlin, which has sent up to great altitudes a number of free balloons carrying self-registering instruments. This work was assisted by a large subscription from the Emperor of Germany.

It has now been proposed to establish a series of simultaneous ascents from Paris, Berlin and Strasburg (where an Alsatian Aëronautical Society has recently been formed), and ultimately from St. Petersburg. This work is under the charges of the Committee on Aëronautics appointed at the Meteorological Conference. A free balloon will be sent up from Paris by Wm. Hersuite and Besançon, on November 14th, at 2 p. m., and it has been requested that balloons be sent up from the German stations at the same time. This night has been selected in view of the meteoric showers, as ascensions may be made to advantage by aëronauts to observe the meteors above the clouds, and they could at the same time secure records with barometers and thermometers. I may be permitted to say that I have myself set the example of making an ascent on that night, which I did as far back as 1867. The results of this ascent by night were published in *Aërial Travels*, edited by T. Glaisher.

If this short note should induce any American observer to make an ascent or to send up free balloons at the dates fixed on in France and Germany, he will do a great service by publishing the results in Science, so that they may be known abroad.

W. de Fonvielle.

Paris, October 30, 1896.

Scientific Literature.

The Life and Letters of George John Romanes: Written and edited by his wife. 8vo. Pp. IX., 360. Longmans, Green & Co., London, New York and Bombay.

This charming memorial of Romanes should be widely read. Romanes was not only an investigator of ability, a writer of great gift, but he was also a man endowed with a rare combination of personal qualities. The portrayal of his character is an interesting revelation even to those familiar with his writings. The biography is more than well done, for it bears on every page the signs of loving discrimination, and, though the editor retires entirely behind

her work, yet that work in itself reveals a personality which must have influenced Romanes' career profoundly, contributing to his development and to that joyous note to which his life seemed attuned until the last years of desperate illness.

Romanes was born at Kingston, Canada, May 20, 1848, and died May 23, 1894. His life, however, belongs wholly to England. His boyhood afforded little opportunity for development, and brought no revelation of his ability, nor was it until he entered Cambridge University that his strength began to show, being called forth largely by the influence of the distinguished physiologist, Michael Foster. While at Cambridge he read for the first time Darwin's works, which became the lastingly dominant influence of his life. Darwin's theory satisfied at once his appreciation of scientific exactitude and his love of broad philosophic problems. The great naturalist formed a close and touching friendship with his young and eager disciple. Their correspondence fills much of the first third of the volume. It continued until Darwin's death. It is most interesting, not only to naturalists, but also from its revelations of character.

Romanes' life was that of a student and with no very striking external events. His biography, therefore, has no element of adventure, but shows us the rôle of one who was active in shaping biological opinion on some of the most momentous questions of the time, pangenesis, the inheritance of acquired characters, the origin of instinct and the evolution of mind. His publications show the man's intellectual magnitude; his biography shows the enthusiasm, the whole-hearted devotion to truth, the generous love of fair play and hatred of personal controversy, which marked him as a character apart.

When Darwin's Life and Letters were published, the fact that he gradually lost his interest in poetry and art made so profound an impression that many began asking whether science made life so barren. It is therefore remarkable that Darwin's foremost disciple in England should have been distinguished by an almost passionate love of both music and poetry, and have also had a deep religious instinct. The story of his religious convictions is most significant. In 1873 he won the Burney prize essay on 'Christian Prayer and General Laws,' and only three years later issued his agnostic book, 'A Candid Examination of Theism.' "It is an able piece of work," says the editor, "and is marked throughout by a lofty spirit, a profound sadness and a belief (which years after he criticised sharply) in the exclusive light of the scientific method in the Court of Reason." His last work, published posthumously, was 'Thoughts on Religion,' the outward expression of the inner change by which he returned to Christian faith.

Romanes had also the poetic faculty, and some of his sonnets are striking. His personal ties were numerous, varied and close, as was natural to a man of so many endowments and of a sympathetic temperament. It is singular to note that he cared comparatively little about painting or the beauties of nature.

The material for the biography is rich in scientific interest and still richer in personal human interest, for Romanes himself was rich in gifts. We are grateful to his wife for so presenting the material that many who did not know him can learn to appreciate him and gain encouragement from his example of industry, sincerity and fortitude.

C. S. MINOT.

On Certain Problems of Vertebrate Development. JOHN BEARD. Jena, Gustav Fischer. 1896. 8vo.

This pamphlet of 77 pages is published to secure attention to the author's theory of animal development. He has claimed, in previous publications, that each individual begins with one generation sexually produced, which produces another genration asexually, the second generation becoming the adult animal. So far as has yet appeared, this theory rests upon the author's observation that the epidermis contributes, in early embryonic stages, to the production of nerve cells. The transformations of these cells *he has not followed*; hence, he concludes, they have disappeared or are transient; hence the whole embryo is a transient structure and, therefore, represents a separate generation. It may be questioned whether a failure to study the fate of certain cells in an embryo is a suf-