deltas and geographies of the geologic past may be discerned in the sediments or stratified rocks that make up the greater portion of the geologic record. This work brings out especially the importance in earth history of the ancient formations laid down upon the lands by the fresh waters and the wind, in contradistinction to those deposited by the seas and oceans.

The length of geologic time was another problem that deeply interested Barrell. In his "Rhythms and the Measurements of Geologic Time," he came to the conclusion that through the rhythmic oscillations of the terrestrial processes which the earth has undergone, its age is many times greater than even geologists in general have imagined—in fact, that it is of the order of about 1,500 million years.

A fourth line of research which occupied Barrell was the origin and genesis of the earth, and here he extended in modified form the Chamberlin-Moulton planetesimal hypothesis, *i. e.*, that the planets and their moons arose out of the sun during a time of induced tidal disruption. Some of his best work was to develop along this line, and an extensive manuscript on "The Genesis of the Earth" is ready for publication.

Since 1913, Barrell has on a number of occasions taken opportunity to point out that the supposed Mesozoic peneplain of southern New England was in reality "stairlike or terraced in its character, facing the sea, and bore the marks of ultimate control by marine denudation. These terraces [more than five in number] are now dismantled by erosion except in regions favored by the presence of broadly developed resistant rock structures. . . . All are regarded as younger than the Miocene." With this view, he adds, we get "a suggestion of the geological rapidity of completion of an erosion cycle in a region near the sea and of a sequence of diastrophic rhythms there recorded." Here too there is considerable manuscript that will be published later on.

Finally, the evolutionary problems connected with paleontology claimed his interest, and he has presented evidence to show that fishes probably arose in the early Paleozoic in the fresh waters of the lands, and thence migrated to the seas. Also that lungs developed out of air-bladders in water-breathing animals caught in recurrent epochs of semiaridity. Such great environmental changes brought about the necessity for change from a water habitat to seasonal dry ones, and hence "the piscine fauna which endured these conditions came through profoundly changed." The primitive sharks of Silurian time, having no air-bladder, "were driven to the seas. The fresh-water fishes which remained were ganoids and dipnoans, fishes with air-bladders efficient for the direct use of air." Finally, from crossopterygian ganoids, under the stimulus of the semiaridity of the Devonian, there emerged the amphibians, able to carry forward their activities as terrestrial animals.

Similarly, he held that man was brought to his present high physical and mental state not merely as the "product of time and life," but that he is "peculiarly a child of the earth and is born of her vicissitudes." The changing climates during the Pliocene and Pleistocene, acting upon the vegetation of these times, caused the prevalent forests of Asia, he thinks, to dwindle away, producing "a rigorous natural selection which transformed an ape, largely arboreal and frugivorous in habits, into a powerful, terrestrial, bipedal primate, largely carnivorous in habit, banding together in the struggle for existence, and by that means achieving success in chase and war. The gradual elimination, first of the food of the forests, lastly of the refuge of the trees, through increasing semiaridity, would have been a compelling cause as mandatory as the semiaridity which compelled the emergence of vertebrates from the waters, transforming fishes into amphibians."

CHARLES SCHUCHERT
YALE UNIVERSITY

SCIENTIFIC EVENTS

THE SOLAR ECLIPSE[1]

TELEGRAMS received by the Astronomer Royal report that at the station at Sobral, in Brazil, occupied by Dr. Crommelin and Mr.

[1] From *Nature*.

Davidson for photographing the field of stars round the sun on the occasion of the total eclipse of the sun last week (May 29), the sky was clear for at least part of totality, and that the program was satisfactorily carried out. The photographs have been developed, and all the stars expected are shown on the plates taken with the astrographic lens, as well as on those taken with a second telescope lent by Father Cortie. The expedition will remain at Sobral until the necessary comparison photographs are taken *in situ*. The message from Professor Eddington at Prince's Island, off the coast of West Africa, which reads "Through cloud, hopeful," may be taken to imply that some success will also be derived from the work of this expedition.

It will be remembered that Professor Eddington and Mr. Cottingham were provided with the 13-inch object-glass of the astrographic telescope of the Oxford University Observatory, whilst the observers in Brazil had the similar object-glass from Greenwich, and that the program of both stations was to take photographs of the stars that surrounded the sun, of which there are at least twelve within 100′ of the sun's center of photographic magnitude ranging from 4.5 to 7.0, for the purpose of testing Einstein's relativity theory of gravitation, and also the hypothesis that gravitation, in the generally accepted sense, acts on light. Photographs that have been taken during the eclipse will be compared with others that have been, or will be, taken of the same stars in the night sky to detect any displacement that may be considered to be due to the presence of the sun in the field.

There is at present no information as to the type of the corona, and apparently few observing parties have been organized to make observations to record this. From a note in the daily press last week, said to emanate from the Yerkes Observatory, it seems not unlikely that a large prominence may have been on the limb of the sun at the time of the eclipse.

It had been announced that the Cordoba Observatory would dispatch an expedition to Brazil, and that possibly Professor Abbot, of the Smithsonian Institution, would proceed to La Paz, Bolivia, where the eclipse happened at sunrise, with coronal cameras and with instruments for measuring the sky radiations by day and night, but it is too early to have heard of any results of such observations. Also it has been announced that Professor D. P. Todd would take photographs of the eclipse from an aeroplane at a height of 10,000 feet from the neighborhood of Monte Video, where the eclipse would only be partial.

REVISTA MATEMATICA HISPANO-AMERICANA

Under the above title a new mathematical periodical began to appear at the beginning of the present year, which may be of some general scientific interest both on account of territory covered by its title and also on account of some of its unique aims. One of these is the publication of corrections of errors found anywhere in the mathematical literature. These corrections are to appear in a special section headed *Glosario Matematico*.

While mathematics is an exact science its literature is by no means free from different types of errors, varying from slight oversights to those relating to matters of fundamental importance. The majority of these errors are readily recognized by the careful reader and need only to be pointed out to be acknowledged; but, as mathematics grades gradually into various inexact sciences —such as philosophy, history and physics—it is clear that a part of its literature relates to the eternal approximations towards an unstable limit and here the question of errors connects up with endless words.

The corrections in the *Revista*, published at Santa Teresa, 8, Madrid, Spain, are supposed to be confined to the former type of errors and these corrections may serve the double purpose of curtailing the repetition of such errors and of pointing out somewhat slippery ground in mathematical fields. It is also of interest to walk securely over ground where experts slipped by overlooking lurking dangers which their slipping caused to change to well-marked pitfalls.

General interest in this new mathematical periodical may perhaps be enlisted by the can-