lunar surface illuminated by the light reflected from the earth, are reproduced in the March number of the *Bulletin de la Société astronomique de France*.

Whilst most people are familiar with the appearance of the moon thus partially illuminated, it is not an easy matter to photograph the phenomenon successfully, but on these photographs many lunar details are shown quite well, except in the sunlit crescent, which is, of course, much over-exposed.

The photographs were taken by M. Quénisset at the Juvisy Observatory, using the Viennet objective of 16 cm. aperture and 2·90 m. focal length, with ten minutes' exposure on a fast plate at the focus.

COSMICAL MATTER IN SPACE.—In his address as retiring president of the Royal Astronomical Society, Prof. Newall directed attention to, and briefly discussed, the possibility that the chief characteristic spectroscopic phenomena of the sun and the stars are mainly produced by matter streaming into these bodies from without rather than by matter brought from their interior layers to their radiating surfaces.

Appealing to various solar, cometary, and physical phenomena, Mr. Newall educed evidence that this view of astrophysics is not an obviously impossible one, and would, if found acceptable, account for several outstanding anomalies (Monthly Notices, R.A.S., vol. lxix., No. 4, February).

OBSERVATIONS OF VARIABLE STARS.—During 1908 Prof. Nijland observed, at the Utrecht Observatory, twenty-one Algol variables, six short-period variables, three variables of the U Geminorum type, SS Cygni, and forty-five long-period variable stars. The results of these observations now appear in No. 4309 of the *Astronomische Nachrichten*, together with a series of notes dealing with any special features observed.

THE CARNEGIE INSTITUTION OF WASHINGTON.

THE seventh year-book of the Carnegie Institution of Washington, for 1908, has just been received, and consists of reports of the president and the executive committee, and of directors of departments and other grantees who, with the assistance of the institution, have been carrying on investigations during the year.

The president's report gives the following facts and figures indicating the growth and extent of the work so far undertaken and accomplished by the institution. Since its organisation, in 1902, about 1000 individuals have been engaged in investigations under the auspices of the institution, and there are at present nearly 500 so engaged. Ten independent departments, each with its staff of investigators and assistants, have been established. In addition to these larger departments of work, organised by the institution itself, numerous special researches carried on by individuals have been subsidised. Six laboratories, for as many different fields of investigation and in widely separated localities, have been constructed and equipped. Work in almost every field of research, from archæology and astronomy to thermodynamics and zoology, has been undertaken, and the geographical range of this work has extended to more than thirty different countries.

At the end of the fiscal year, October 31, 1908, 120 volumes of researches in nineteen different fields of research, with a total of more than 30,000 pages, had been published, and twenty-seven volumes of researches were in the press. In addition to these publications issued by the institution, about 1000 shorter papers have been published in the current journals of the world by departmental investigators, by associates, and by assistants. The total amount of funds allocated for expenditure to November 1, 1908, was 737,000*l*., which included 59,000*l*. reverted and afterwards re-appropriated. The total amount expended was 672,000*l*.

During the past year the Nutrition Laboratory in Boston has been equipped, and systematic investigations are already in progress.

The construction of a building in Washington, D.C., at the south-east corner of Sixteenth and P Streets, N.W., was begun a year ago. This building is for administrative offices and the storage of records and publications, and when completed will cost about 44,000*l*.

The plans and specifications for the construction of a specially designed ship for ocean magnetic work have recently been completed. These plans require a non-magnetic sailing vessel with auxiliary propulsion. She will be classified as a yacht, will be called the *Carnegie*, and will, upon completion, proceed upon a magnetic survey of the Atlantic Ocean under the direction of the department of terrestrial magnetism of the institution. The grant for the construction of this vessel is 8000*l*.

A temporary observatory for supplementary measures of the positions of the fixed stars of the southern hemisphere is now being built at San Luis, Argentina, under the direction of Prof. Lewis Boss, head of the department of meridian astronomy of the institution. Prof. R. H. Tucker will be resident astronomer in charge of the work of observing and computing in South America, which will require three to five years for completion. The meridian instrument of the Dudley Observatory, the constants of which have been thoroughly investigated, will be transferred to San Luis and used in securing the desired measurements of the positions of stars in both hemispheres.

Work in the other departments of the institution has progressed rapidly and successfully. The investigations of Dr. G. E. Hale, director of the Solar Observatory on Mount Wilson, California, are of great interest. During the year, with the aid of his exceptional equipment, the discoveries which have been made with regard to sun-spots will probably prove of as great importance to terrestrial and molecular physics as to solar physics. The progress inaugurated may be confidently expected to lead rapidly to definite and important results. The expenditure on account of the site, buildings, instruments, and other appliances of the observatory was, up to September 30, 1908, 71,631*l*.

Under the direction of the department of historical research, work upon manuscript materials for American history has been pursued in France, Italy, and England, and next year will be extended to Germany. Many remarkable experiments and investigations are in progress under the department of botanical research at the Desert Laboratory at Tucson, Arizona.

In addition to the work carried on in the departments of the institution during the year, thirty-one grants were made to individuals and organisations in aid of researches conducted by them, and many other researches begun in former years have been carried forward. The publication of twenty volumes was authorised, and twenty-seven volumes and an atlas have been published. The latter include the report upon the California earthquake of April 18, 1906, a handbook of learned societies and institutions of North and South America, and a reproduction of the "Old Yellow Book," the source of Browning's "The Ring and the Book." These volumes and others issued by the institution are offered for sale at the cost of printing and transportation to purchasers.

At the annual meeting of the board of trustees on December 8, 1908, the sum of 127,260*l*. was allocated to carry on work of investigation, publication, and administration during the year 1909.

RECENT PAPERS ON DARWINISM.

THE *Fortnightly Review* for March contains an admirable article, by Dr. A. Russel Wallace, on "The World of Life, as Visualised and Interpreted by Darwinism." The veteran author argues with all his old vigour and eloquence in favour of the theory of the origin of species by natural selection, bringing out the facts of extensive and independent variation under natural conditions, emphasising the reality of the struggle for life, and insisting on the facts of adaptation as inexplicable under any other hypothesis than that of Darwin. He