

Biology. The generous gift by an anonymous donor of 500*l.* towards new apparatus has been a great boon. A gas-engine and many valuable pieces of apparatus have been added.

Prof. Macalister states that the number of students dissecting has been nearly one hundred, and a still larger number attended the lectures on Human Anatomy. Many important specimens have been presented to the Museum of Human Anatomy by Prof. Macalister.

The Philosophical Library is increasingly used, and many valuable donations of books have been received by Mr. J. W. Clark, Prof. Humphry, Prof. Babington, Mr. D. McAlister, and Mr. Pitman of Bath.

### SCIENTIFIC SERIALS

*American Journal of Science*, May 1884.—Remarks on Prof. Newcomb's "Rejoinder," in connection with his review of "Climate and Time," by Dr. James Croll.—Communications from the United States Geological Survey, Rocky Mountain Division, VI.—On an interesting variety of Löllingite and other minerals (one illustration), by W. F. Hillebrand. Amongst the ores analysed by the author there is one from the Missouri Mine, Park County, Colorado, which he thinks may probably be a new mineral. It is composed largely of a sulphobismuthite of copper and silver, and occurs in a quartz gangue associated with chalcopyrite and wolframite.—Notes on American earthquakes, with tabulated record of seismic disturbances in every part of the continent during the year 1883, by Prof. C. G. Rockwood.—Thermometer exposure, by H. A. Hazen. The paper is chiefly occupied with questions relating to the locality in large regions where the thermometer should be exposed in order to obtain the most trustworthy results, and to the immediate environment of the thermometer best calculated to fulfil the same requirement. There are several comparative tables of results obtained with various instruments under varying conditions of time, aspect, and altitude.—Hillocks of angular gravel and disturbed stratification associated with glacial phenomena (four illustrations), by T. C. Chamberlain. The paper deals especially with the kames or eskers analogous to the osars of Sweden, occurring in various parts of New Hampshire, Massachusetts, New York, and Wisconsin. The author infers from their inherent characteristics and their association with morainic belts, that the gravel hills in question were formed, not by beach action, but by numerous marginal streams along the edge of the great ice sheet during the Glacial period.—Extinct glaciers of the San Juan Mountains, Colorado, by R. C. Hills.—On the gender of names of varieties and subspecies in botanical nomenclature, by Asa Gray.—On secondary enlargements of feldspar fragments in certain Keweenawan sandstones (four illustrations), by C. A. Vanhise.—Principal characters of American cretaceous Pterodactyls, part i., the skull of Pteranodon (with plate), by Prof. O. C. Marsh. The skull of these Pterodactyls from the Middle Chalk, West Kansas, is described as differing from that of other known Pterosauria in the absence of teeth and of anterior nasal apertures distinct from the ant-orbital openings; in the presence of the elongated occipital crest; lastly, in the whole jaws, which appear to have been covered with a horny sheath, as in recent birds. All belong to the genus Pteranodon, some of the species of which were of prodigious size, with a spread of wings of about twenty-five feet. Remains of over six hundred individuals are now in the museum of Yale College.

*Journal of the Russian Chemical and Physical Society*, vol. xvi., fasc. 2.—On the action of the bromide of aluminium on ethylene and on the bromides of saturated hydrocarbons, by M. Gustavson.—On the specific heat of solutions, and on the thermal effects at their formation, by W. Alexeyeff. Submitting to a closer investigation those solutions which are accompanied by a lowering of temperature, the author comes to the conclusion that such is the case for those liquids which have not a chemical affinity, and that those are true solutions; while in those cases where a rise of temperature is noticed, the dissolved liquid enters into chemical combination with the dissolving one. He makes a series of very interesting experiments in order to determine the thermal effects of various solutions.—On the relations between the chemical composition and the refractive power of chemical compounds, by J. Kanonnikoff (second paper).—On the structure of nitro-compounds of the saturated series, by J. Kissel.—On the composition of the mineral waters of Caucasus, by J. Barsilovsky.—On the structure of the blue

indigo, by P. Alexeyeff.—On the action of alkalis on chondrine, by M. Schwarz.—On the azocumic acid, by P. Alexeyeff (first paper).—On chemical affinity, by A. Bazaroff.—Analysis of the epidermis attacked by the *Prosyarris rubra*, by K. Wagner.—On the preparation of pure albumin, and on the determination of chlorine in urine, by W. Mikhailoff.—On the structure of the atmosphere and on the general laws of the theory of gases, by E. Rogovsky. The strong mathematical inquiry of the author brings him to the following conclusions:—However the atmosphere has no limits, but at a height of 1000 km. the density of air is very near to zero; its constitution varies with the height, the content of oxygen decreasing as the height increases; this change is very slow for heights less than 10,000 m., still it might be ascertained by accurate measurements; for heights less than 10,000 m. the density of air can be calculated as if it were a simple gas; the decrease of density with the height goes on slower when the temperature at the surface of the earth is higher. The paper has to be continued.—On the theory of measurements, by N. Sloughinoff.—On galvanic batteries, by P. Novikoff.

*Rivista Scientifico-Industriale*, March 31 and April 15.—Electric currents through contact with earth, by Prof. A. Volta.—Experiments with electrified paper, by D. Surdi.—Variations in the electric resistance of solid and pure metallic wires, with variations of temperature, by Prof. Angelo Emo.—On the Gauthier and Walrand methods of distinguishing steel from iron, by the editor.—Note on two hybrids of *Anas boschas* and *Dafila acuta*, by Dante Roster.

*Rendiconti del R. Istituto Lombardo*, April 3 and 17.—Programme of prize essays in various departments of Science, Art, and Letters proposed for the years 1884–91.—The Castle of Milan, its historic and artistic associations, by Prof. Giuseppe Mongeri.—On some unpublished fragments of Anatolius's Greek version of the "Codex Justinianus," by Dr. C. Ferrini.—Note on Virgil and his Italian imitator, Parini, by Prof. Cr. Fabris.—On Antonio Angeloni Barbiani and his literary productions, by E. B. Prina.—Analysis of the mineral waters of Acquarossa, Canton of Ticino, by Prof. G. Bertoni.—Malformations in the urinary ducts in Bright's disease, by Prof. C. Golgi.—Meteorological observations made at the Brera Observatory, Milan, during the month of March.

### SOCIETIES AND ACADEMIES

#### LONDON

**Royal Society**, May 1.—"Report to the Solar Physics Committee on a Comparison between Apparent Inequalities of Short Period in Sun-spot Areas and in Diurnal Temperature Ranges at Toronto and at Kew." By Balfour Stewart, M.A., LL.D., F.R.S., and William Lant Carpenter, B.A., B.Sc. Communicated to the Royal Society at the request of the Solar Physics Committee.

It has been known for some time that there is a close connection between the inequalities in the state of the sun's surface as denoted by sun-spot areas and those in terrestrial magnetism as denoted by the diurnal ranges of oscillation of the declination magnet; and moreover the observations of various meteorologists have induced us to suspect that there may likewise be a connection between solar inequalities and those in terrestrial meteorology.

This latter connection, however (assuming it to exist), is not so well established as the former, at least if we compare together inequalities of long period. It has been attempted to explain this by imagining that for long periods the state of the atmosphere as regards absorption may change in such a manner as to cloak or diminish the effects of solar variation by increasing absorption when the sun is strongest, and diminishing absorption when the sun is weakest.

On this account it seemed desirable to the authors to make a comparison of this kind between short-period inequalities, since for these the length of period could not so easily be deemed sufficient to produce a great alteration of the above nature in the state of the atmosphere.

The meteorological element selected for comparison with sun-spots was the diurnal range of atmospheric temperature, an element which presents in its variations a very strong analogy to diurnal declination-ranges.

There are two ways in which a comparison may be made between solar and terrestrial inequalities. We may take each