which he finds himself able to direct somewhat in their future combinations, as the chemist handles radicles and proximate principles; but President Schurman has long since pointed out that there is a 'fundamental contrast between the initial variations and the subsequent means of their preservation'; for example, between modifying organisms and originating idiosomes and 'that where science stops, philosophy begins.'

It is to this lothfulness to directly admit that Czolbe was right in saying: "The power of organisms cannot be explained by the planless and formless physical and chemical activities;" that Schurman refers in saying: "This jugglery with causality, as though in time everything could be got out of almost nothing, is the besetting sin of Darwinists." CHARLES S. DOLLEY.

PHILADELPHIA.

Aero-therapeutics or the Treatment of Lung Diseases by Climate. By CHARLES THEODORE WILLIAMS. London and New York, Macmillan & Co. 1894. 8°, pp. 187.

This is a good book by a competent authority, being the Lumleian lectures for 1893, by Dr. Williams, who is the senior physician to the hospital for consumptives at Brompton, and the late President of the Royal Meteorological Society. It includes a discussion of those factors and elements of climate which bear directly upon human health, and is especially full upon the subject of atmospheric pressure and its variations, and on the effects of high altitudes upon cases of consumption.

The effects of such altitudes as are usually resorted to for curative purposes depend in part upon the rarefaction and increased diathermancy of the atmosphere, and in part upon the change in habits, exercise and food which is made when becoming a resident of such a resort. One of the most definite effects produced by diminished atmospheric pressure upon the healthy animal organism is an increase in the number of the red corpuscles of the blood, which has been shown by Viault and Eggar to occur in man to the amount of 16 per cent. in the course of three or four weeks. Mountain races usually have large chests, comparatively great activity of the respiratory organs, and great power of endurance for walking. They are usually remarkably free from scrofula and consumption, which is probably due to absence of overcrowding and to their comparatively great amount of out-door life, which greatly lessen the chances of their becoming infected with the tubercle bacillus. The sending of consumptives to high altitudes is a method of treatment which has come into vogue within the last thirty years, Davos and St. Moritz being the first of this class of health resorts to attract special attention. Dr. Williams concludes that this mode of treatment is most effective in recent cases of consumption, that at least six months', and in many cases two years', stay is desirable, and that it produces great improvement in about 75 per cent. of the cases, and a cure in about 40 per cent. One chapter of the book is devoted to the high altitudes of Colorado and their climates, and is based on the author's personal observations. The greater part of the surface of this State is over 5000 feet above the sea level, and some of the most beautiful parks are above 7000 feet in altitude, the atmosphere is dry and clear, and there is sunshine the year round, all of which are important factors in the treatment of consumption. Physicians will find Dr. Williams' comments upon the importance of these great mountain plateaus and parks, as a location for consumptive patients in the first stages of their disease, to be interesting and valuable.

PHYSICS.

On the Voluntary Formation of Hollow Bubbles, Foam and Myelin Forms by the Alkaline

Oleates, together with Related Phenomena, Especially those of Protoplasm. G. Quincke. Wiedemann, Ann. 1894. Vol. 53, p. 593.

This article is a continuation of Prof. Quincke's investigation published in 1888 (Weid., Ann., Vol. 35, 1888, p. 562, et seg), and a reply to the criticisms which his article provoked. It gives the results of elaborate investigations upon the phenomena observable upon mixing various soaps, oils and water, and traces them to surface tension and allied forces. Some very interesting suggestions are given upon the similarity of some of the resulting appearances, with the arrangement of the heavenly bodies in space, and a strong likeness is shown between some of these peculiar bubbles with very thin, solid walls formed in such mixtures, and some of the formations in plant cells. The observations also go far toward explaining the motions sometimes observed in cells, which would seem to be due to the same forces as produce those peculiar motions of a drop of oil upon water.

On the Comparison of High Range Mercury Thermometers of Jena Glass 59III, with the Air Thermometer at temperatures between 300° and 500° C. By Alfons Mahlke. (Wied. Ann. 1894. Vol. 53, p. 965.)

Contains a very careful determination of the apparent co-efficient of expansion of mercury in Jena glass 59III, and demonstrates the availability of mercury thermometers made of this glass for the measurement of temperatures up to 500° C. (900° Th). William Hallock.

On the Units of Light and Radiation. By A. Macfarlane, D. Sc., LL.D. A paper read before the American Institute of Electrical Engineers, 16th January, 1895. (Abstract.)

The author shows that the difficulty experienced in defining and denoting the different ideas commonly expressed by the word 'candle' is due to the want of a name for the unit of solid angle; and suggests the word *steradian*, which has already been used for that purpose.

He considers the different physical ideas in the general subject of radiation, and shows the appropriate expression for the unit of each. With this system of radiation units he compares the system of units of light recently proposed by M. Blondel, and shows that the light system ought to be parallel to, not identical with, the radiant energy system. Finally he discusses M. Hospitalier's proposed symbols for light quantities.

GEOLOGY.

Report on the Bevier Sheet, by C. H. Gordon and others. Arthur Winslow, State Geologist, Mo. Geol. Surv. 1894.

This is the second of a series of detailed reports on areal geology in Missouri. The main feature is a carefully prepared and well executed topographic and geologic map, which includes portions of Macon, Randolph and Chariton counties, an area of about 250 square miles. This map is on a scale of $\frac{1}{62250}$ and the topography is shown by contours of 20 feet interval. The topographic base was executed by Messrs. C. H. Gordon, C. F. Marbut and M. C. Shelton. On the map are shown the horizon lines of the coal beds and the distribution of the geological formations, as well as the location of coal pits, drifts and drill holes. It is accompanied by a sheet of columnar and cross-sections, which give details of the geology. In the accompanying text, Mr. Gordon describes the physiography, including the topography, drainage, soil, forestry, etc., and the stratigraphic and economic geology. The Quaternary geology is reported on by Prof. J. E. Todd, and the distribution of the clays and shales by Mr. H. A. Wheeler, E. M., who were employed as specialists and whose reports on these subjects for the whole State are in process of preparation. J. D. R.